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PCNOVICE

PERSONAL COMPUTERS IN PLAIN ENGLISH

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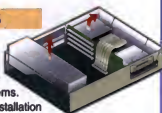


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TECHNOLOGY NEWS

Compiled by Cindy Krushenisky

Technology Outruns Mother Nature



Yes, it may finally be true. Technology may be able to operate faster than Mother Nature. At least, that's what the California Institute of Technology (Caltech) and the United States Geological Survey (USGS) are hoping to find out during an 18-month test that began earlier this year.

They will be testing real-time earthquake monitoring with a small network of 20 digital seismometers linked to a Pacific Bell digital telecommunications service called Frame Relay.

Frame Relay is high-speed transmission technology with a large bandwidth. Data can travel over the service at the speed of light (186,000 miles per second), which is faster than an earthquake's shockwaves that move considerably slower at two miles per second.

Caltech and USGS scientists anticipate that the test will show them how to construct a full-scale, digital seismographic network with hundreds of monitoring stations. With such a network, the seismologists believe they could cut as much as 30 minutes off the time it takes to collect, calculate, and broadcast vital data for major earthquakes to hospitals or public safety personnel. Despite the \$20 million the network could cost to build, metropolitan Los Angeles might receive as much as a one-minute warning to close bridges, pause rail traffic, stop the flow of hazardous chemicals, and inform school children to duck and cover. ●

Apartment 2000

What will the apartment of the future be like? GE Capital-ResCom (a unit of General Electric Capital Corp.) says it has a pretty good idea.

Along with the National Multi Housing Council, GE Capital-ResCom introduced "Apartment 2000" this January at the National Multi Housing Council annual meeting in Phoenix. Apartment 2000 is a full-scale, 1,150-square-foot apartment that features advanced household appliances and home furnishings to give a glimpse of apartment life in the near future.

Some of the features include front-door video security, fingerprint keyless entry, automated shopping lists, and interactive, intelligent entertainment centers. Apparently, apartments won't be left off the Information Superhighway. Apartment 2000 is equipped so occupants can shop and purchase just about anything from their apartment, choose from thousands of movies, and access libraries, universities, and specialized databanks around the world through their PC. ●

Phone Numbers With A Real Following

"Mary had a little lamb whose fleece was light as snow, and everywhere that Mary went, the lamb was sure to go." Too bad

Mary didn't have one of those new "follow-me-everywhere" 500 phone numbers. He could have just called.

Yes, it's true. You can get a phone number that will follow you around. Companies like AT&T and BellSouth Telecommunications have just begun distributing phone numbers with a 500 prefix.

Here's how it works. Through the new services, the 500 prefix commonly is followed by a special number that identifies the long-distance or wireless carrier to which the customer subscribes. When the carrier is identified, the call is routed to the carrier, who then forwards the call to any location provided by the customer. This number can be programmed to ring any telephone, cellular phone, pager, fax machine, or personal computer that can be dialed directly.

The benefit is that the phone number can be programmed to follow you from hotel room to hotel room, or from home phone to office phone to cellular phone, no matter how frequently you move.

AT&T has already begun providing the 500 numbers to National Football League players, the American Institute for Foreign Study, and Cross Country Healthcare. It also is selling the service to tens of thousands of customers who reserved the numbers last summer, as well as customers currently signing up. BellSouth expected to begin its service no later than the end of April. ●

Networks In Space



Networks bring people together in remote locations here on earth, why not in space? The National Aeronautics and Space Administration (NASA) and the Russian Space Agency (RSA) are working on a historic, joint mission in which they will install a Cabletron Ethernet hub (the central components of a local-area network that connect computers) aboard the Russian Mir Space Station in the Spektr Laboratory Module.

The Cabletron hub will be the first of its kind, and will network space-based, on-board, life science experiments. It should provide easy data transfer from in-flight experiments to the Mir Space Station telecommunications technology and then to earth. Crews will be able to use the same type of hardware and software used in their labs on earth in their research in space.

The prior system used by space crews was complicated and time consuming. Each spacecraft platform had to uniquely package experimental data to a special "down-link" before it could be sent to earth.

Launch time for the Mir 1, which will carry the Cabletron hub, was scheduled for mid-Spring from Russia. Next year, a second Cabletron hub will be carried to space by the NASA Space Shuttle. This Spektr mission is the first of a series of Russian launches and NASA Shuttle flights to the Russian Mir Space Station to conduct joint scientific and technological research, as well as to upgrade the Mir's on-board equipment. ●

Virtual Reality A Reality?

Up to this point in time, what some companies have been calling virtual reality (VR) in their personal computer software products is far from what most people would envision as virtual reality—being able to “walk through” an environment in three-dimensions.

Apple Computer Inc. is hoping to change that with a new award-winning software technology it is licensing to software developers, called *QuickTime VR*. You'll probably see this term in upcoming multimedia titles. *QuickTime VR* is software that lets a user view a photographic or rendered representation of a scene.

Developers can create scenes that let the user explore the scene on all sides, in 360 degrees, through a special panoramic technology, or they can use an interaction technology that would let users pick up and interact with objects on-screen. As the viewer changes his or her view of the screen by turning his or her head or zooming in or out, the perspective of the scene is maintained, meaning there isn't any cutting in or out or any image distortion. So you get the effect of being at the location and looking around.

Apple claims it will let developers create scenes in which users can get the feeling of the size and intricate design of the Great Wall of China, or “walk down” the corridors of a newly planned office building. *QuickTime VR* will be operable on Macintosh-based computers and on computers running Microsoft Windows. ●

3-D TV



Remember black-and-white television? It was innovative enough until color television came along. Now television is in for another big change, and we aren't talking about the kind of programming it offers. Rather, it's the boring old two-dimensions to which we are accustomed.

In January at the 1995 Winter Consumer Electronics Show in Las Vegas, Sanyo Fisher Corp. displayed three-dimensional, liquid-crystal display (LCD) television screens. Sanyo contributed to the development of these four-, six-, and 10-inch LCD video screens that don't require any special eyeglasses or headgear to see images in “3-D.”

An image-splitting technology has potential in applications such as video games, car navigation systems, three-dimensional medical and educational displays, and three-dimensional television.

In order for us to enjoy these three-dimensional screens, the images we view have to be captured in three-dimensions as well. Several companies are working on this 3-D video capturing method. One company, 3D America of Burbank, Calif., debuted such a system at the National Association of Television Program Executives Expo in Las Vegas this January.

Using a unique detachable camera lens device, 3D America can capture three dimensions on live video broadcasts. These broadcasts are compatible with all existing television broadcast systems worldwide. The company's three-dimensional Envista system is currently up and running. In fact, it was tested last May on the Fox network. ●

Virtual Reality On The Move



Students in numerous science classes across 14 western states from Oregon to Nebraska are really getting into their school work, thanks to a “virtual reality roving vehicle” (VRRV) funded by the US West Foundation that has been visiting their classrooms.

Have you ever wondered what it would be like to step inside a water molecule? While it may be impossible in the real world, the VRRV is making it possible in virtual reality. Wearing a special helmet, students can view a “wrap-around” screen that allows them to “walk around” and view a water molecule or visit a realistic wetland environment.

The students themselves designed a lot of what they are studying. They designed elements of the virtual worlds using school computers and then sent the information to the Human Interface Technology Laboratory, a joint research unit of the Washington Technology Center and the University of Washington, where the information was turned into virtual reality. When the van visits a school, students can put on the helmet and see their work and the work of other students.

The first VRRV van began visiting schools in Oregon and Washington early this year. A second phase of the program will begin in Nebraska this fall, followed by a third in a different state late this year or early next year. ●

Tech Shorts



You've probably heard of the U.S. Peace Corps sharing their expertise with developing countries. Now there's the Massachusetts Tech Corps, a group of technology professionals who are sharing their knowledge to get local schools up and running with today's computer technology. The group of volunteers was formed in cooperation with the Massachusetts Software Council, Computerworld Inc., and the professional services company Deloitte & Touche LLP. ...

Got a lot of CD-ROMs lying around and don't know what to do with them? Fisher Audio/Video (of Sanyo Fisher Corp.) recently unveiled the first prototype of a 24-disc, CD-ROM changer at the 1995 Winter Consumer Electronics Show. The Studio 24 CD-ROM changer should soon hit stores with the ability to store and organize 24 CD-ROMs, Photo CDs, and audio CDs. ...

Need tickets to the latest show? Want money for a night on the town? Have to take care of an overdue parking ticket? TransActive Technologies Inc. of Seattle is hoping that you will be using their SuperTerminals to do all these things in the near future. Promoting the SuperTerminals as making access to the Information Superhighway as easy as using an automatic teller machine, the machine uses multimedia and touch screens for a friendly interface. If everything goes as planned, the company projects that consumers will see SuperTerminals sometime this spring. ●

PRODUCT PREVIEWS

CD For Your TV

Why get a PC when you have a TV to entertain you? Well... there are a lot of reasons, but a new company based in Tel Aviv, Israel (with offices in the United States) has just eliminated one of them.

Digital Interactive Systems Corp. (DISC) recently unveiled a line of "MultimediaCD" players called DISCover that allow you to play CD-ROM programs on your television.

Based on a 486 processor, the DISCover line has the power and capabilities of a MPC Multimedia PC capable of playing MPC2 CD-ROMs (which include most CD-ROM titles now available), as well as audio CDs and Photo CDs. You operate the titles on your television through infrared remote controls, on-screen virtual keyboards, and an on-screen front control panel. The system even is equipped with a Sound Blaster-compatible sound card and Microsoft Windows.

However, when you consider the cost of the units, you may want to save up and get a PC. A basic unit costs \$995. A player with Video CD (which can operate MPEG full-motion videos) costs \$1,295. The home theater unit runs about \$1,595, and the Deluxe home theater unit, including a built-in modem and quadruple speed CD-ROM, costs \$1,995. For more information, you can contact DISC's U.S. office at (213) 912-3163. ●

Talk Back



Does your automobile talk to you? If so, what does it say? Does it remind you to fasten your seatbelts or that your trunk is open? What if it could remind you about your dentist appointment and the address for a client you need to visit? That would probably be more useful, not to mention less annoying.

Panasonic has figured out a way for your car to inform you of the things you need to remember. The company has placed a built-in recordable chip into its model CQ-R535 car stereo, making it the first interactive, recording car stereo.

The CQ-R535 works somewhat like an electronic memo device. Users can record anything they want, as long as it is only 20 seconds long, into the chip. Then they can play back the recording later to remind themselves about appointments, to-do lists, directions, greeting messages, or phone numbers received on a cellular phone call.

When you want to listen to your reminders, a press of a button plays back the recording, temporarily overriding music from the cassette player or radio tuner. An auxiliary power pack will be available soon so users can record messages outside the car using only the stereo's antitheft removable faceplate. Go ahead and record all you like; because the system relies on a microchip, new messages will suffer little loss in quality.

When it's not recording your messages, the CQ-R535 can handle a six- or 12-disc Panasonic CD changer, a cassette deck, and a FM/AM radio with all the extras. The new car stereo was expected to be available in March for a suggested retail price of \$299. For more information, you can contact Panasonic (a division of Matsushita Consumer Electronics Co.) at (201) 348-9090. ●

A CD For The Road



If you're a mover and a shaker who just can't be without your CDs, Sony has a product for you. It's the CD-ROM Discman: a compact CD-ROM/audio player for people on the go.

The Discman, weighing a sleek 10 ounces, includes a double-speed CD-ROM that provides MPC2 multimedia performance to operate IBM and compatible CD-ROMs, as well as Photo CD applications. It also operates as a full-function audio CD player, with features such as Program, Shuffle, and Repeat. And all this on two AA batteries.

That means when you're finished listening to your favorite CDs, you can plug the CD-ROM Discman into your desktop computer via a parallel port connection (a port on the back of your computer where peripherals can be plugged in), or into a portable computer via a PCMCIA connection (a credit-card-sized storage media). But you will have to be fast. Two batteries will provide you one to one-and-a-half hours of CD-ROM operation and/or up to six hours of music listening.

The CD-ROM Discman was made available early this year. Several models range in price (suggested retail price) from \$380 to \$750. The more expensive models also will include the Sony Soundbox, which has a built-in stereo card and speaker. For more information, contact Sony at (800) 766-9236. ●

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A Hauntingly Good Program

Are you mad about monsters? Do ghosts and ghouls make you grin? If creepy creatures are what you crave, Microsoft Corp. and Byron Preiss Multimedia Co. have introduced a new children's program that's hauntingly good.

Aimed at children ages 8 and older, *Gahan Wilson's The Ultimate Haunted House* places you smack-dab in the middle of an animated haunted house, full of monsters, ghosts, skeletons, vampires, and other scary creatures.

Your goal is to escape before the clock strikes 13. If you fail, you will be stuck inside forever. But it's not as easy as finding the Exit sign. First you must locate 13 keys that are scattered throughout the house.

Along with keys, you collect other objects in the house to trade

to other characters or to use in order to get more keys. But be careful, you don't want to make the other characters angry. They may put a curse on you. Under its spell, the house will appear to turn colors and objects will do unusual things, wasting precious time.

The program is not solely a race against time. There are tons of diversions. As you explore, you can watch monster minivideos by Gahan Wilson, the master of the macabre. You can build your own monster in the lab, then watch him dance the Monster Mash. You can cook something scary with gross ingredients. You even can create your own pictures or play games like tic-tac-toe and hangman. You'll have so much fun you may not mind staying forever.



Explore the rooms of *Gahan Wilson's The Ultimate Haunted House* for a hauntingly good time.

The best part about Gahan Wilson's *The Ultimate Haunted House*, which sells for about \$35, is that the program is different every time you play. That means it can keep you entertained for hours. The graphics also are wonderful and there are lots of creepy music clips and sounds. However, it's not really an educational product that

your children will learn from. In fact, because of the scarier nature of the program, it may not be suited for every child.

For More Information:

Microsoft Corp.
(800) 426-9400
(206) 882-8080 ●

Typing Takes Off With The Multimedia Typing Instructor

Typing lessons were never what you might call entertaining: boring lessons, monotonous drills, and reprimands for glancing too often at your fingers. But they don't have to be that way. Take, for example, a new interactive software program introduced by Individual Software on CD-ROM that uses pictures, sound, and video to make the whole experience a little less like work.

Instead of the old classroom feel, the *Multimedia Typing Instructor* uses an interactive travel theme, complete with a terminal, passport, and exotic destinations.

The program begins by issuing a Typing Passport, in which you set the goal you would like to achieve. Then you are shuttled to an Airport Terminal, where you click on objects to go to different areas. For instance, click on an overhead monitor to start a typing lesson or to take a test. Click on a kiosk to see your test results. Click the magazine rack to practice typing hundreds of articles on subjects such as sports, medicine, literature, entertainment, history, and law. Click the courtesy phone to get help.

There are four levels of lessons, from students who can't type at all to those who type proficiently but want to brush up on their skills. After receiving a boarding pass, you board a plane, where you receive a typing

The Multimedia Typing Instructor places you at an airport terminal, in which you click objects to go to different areas of the program.



lesson on a "laptop computer." When you reach your destination (places such as France, Japan, Greece, the Bahamas, Egypt, Australia, and England), you take a typing test with scenic views and music clips from the destination in the background. Finally, Progress Reports let you analyze your strengths and weaknesses by keys and fingers.

If you're looking for a little adventure, two Virtual Adventure Games provide an entertaining diversion as you improve your typing skills. You must keep up your speed and accuracy, otherwise you risk being overwhelmed by sea creatures or space flotsam.

The lessons build your skills a few fingers and keys at a time. The program even gives you typing tips, such as proper posture, proper hand positioning, and exercises that help you relax.

We thought the Multimedia Typing Instructor, which sells for about \$30, had lots of materials that kept the practice interesting and entertaining. The graphics were really attractive, but there could have been more video, as most is consolidated to a History of Typing feature that details how typing has evolved over the years.

For More Information:

Individual Software Inc.
(800) 822-3522
(510) 734-6767 ●

A View To A Kill



See if the following phrases strike you as dealing with any particular topic. The Nix Film. The House Select Committee. *Crossfire*.

Take a shot at these. Bealey Plaza. Magic Bullets. The Texas School Book Depository. If you still can't draw a bead on the topic, try the Zapruder film, Nov. 22, 1963, and the Grassy Knoll.

These, of course, are all major elements in the twisted and oft-debated tale of President John F. Kennedy, Jr.'s assassination in Dallas. If it took some time to catch on to the theme of these phrases, you might brush up on your JFK trivia.

An excellent place to start is Medio Multimedia's *JFK Assassination: A Visual Investigation*. This CD-ROM, selling for about \$40, demonstrates educational multimedia at its best. The disc provides a wealth of video, computer animation, and text on the facts, findings, and speculations surrounding the assassination. The film section is an intriguing place to begin your own investigation. The Zapruder film, of course, is there, along with lesser-known images such as the Nix and Hughes films. Each film can be viewed in full screen or window, and regular or slow speeds. A frame-by-frame option lets you click through each frame while a counter shows the position in the film. This proves invaluable when reading reports that refer extensively to individual frames of the films. The accompanying commentary and text help viewers glean more from each

viewing of the films. You soon pay close attention, for example, to the street sign, a running girl, and twists of Jackie's head in the Zapruder film.

The analysis section uses multiple computer animations to represent the positions of bullets and gunmen as described in various theories of the assassination. The narrated images are crisp and useful in visualizing elements such as lines of fire. Extensive text on the disc includes the full text of two books and the Warren Commission report. All major references are linked so that clicking on Lee Harvey Oswald, for example, takes you to more detailed reading. Be forewarned that *JFK Assassination* is as addictive as any computer game. Users are likely to spend several hours sitting endlessly playing the films and devouring the text. Friends and family who don't want to discuss the assassination should stay clear of the disc's new owners.

If the facts of his death aren't enough, *JFK* buffs can take over the portion of the president's life that he missed. Compton's NewMedia's *Reelect JFK*, available for less than \$50, begins with a fictitious newscast reporting that the president escaped the attempt on his life with only a shoulder wound. Back in the Oval Office, users play *JFK* as he deals with Vietnam, civil rights issues, his own re-election campaign, and the search for the would-be assassins. Users interact with filmed actors playing cabinet members and other officials. When they deliver information or ask questions, you choose from responses such as "calm" and "angry" and listen to a *JFK* impersonator speak accordingly. Newspaper headlines,

scenarios, and approval ratings critical to the campaign are constantly changing based on the player's actions.

Reelect *JFK* offers an interesting opportunity to explore what might have been. Game play is easy to understand, and the video segments move smoothly. Some dialogue, however, sacrifices authenticity to bring players up to speed. Cabinet members, for example, explain the elements of the Civil Rights Bill to *JFK* as if he wouldn't already know what it entailed. Attorney General Robert Kennedy enters to say he was just sorting the

president's mail and thought he'd like to see the confidential letters. We know government officials often don't do much, but the country's highest legal official sorting mail is a bit ridiculous. Overall, however, *Reelect JFK* puts a new twist on the old role-playing game genre.

For More Information:

Medio Multimedia
(800) 788-3866
(206) 867-5500

Compton's NewMedia
(619) 929-2500 ●

CD-ROMs Grab Shelf Space

If consumers truly vote for their favorite products via their pocketbooks, computer users are in the process of electing a new favorite among software media—CD-ROM.

According to recently released information from PC Data, a market research firm in Reston, Va., 1994 sales of CD-ROM (compact disc, read-only memory) software were 354% higher than 1993 sales. CD-ROM accounted for 37 cents of every dollar spent on software in the United States during 1994.

"The CD market is exploding, and it is clearly altering the way retail stores do business," says Ann Stephens, president of PC Data. "They are simply keeping CD products on the shelf for a longer period of time."

Not surprisingly, more CD-ROM drives apparently are available to

play the new software titles.

InfoTech of Woodstock, Vt., estimates the worldwide installed base of CD-ROM drives increased 137% from 1993 to 1994. An estimated 26.9 million CD-ROM drives are now installed,

according to InfoTech, an international CD-ROM and multimedia market research firm.

Myst from Broderbund was the top-selling CD-ROM package in 1994, according to PC Data. Other CD-ROM packages in PC Data's 1994 top 10 are: *Doom II* from GT Interactive, *5 Ft 10 Pack Volume 1* from Sirius, *Star Wars Rebel Assault* from LucasArts, *7th Guest* from Virgin, *Microsoft Encarta* from Microsoft Corp., *The Lion King* from Disney, *Print Shop Deluxe CD Ensemble* from Broderbund, *Quicken CD-ROM Deluxe* from Intuit, and *Corel Gallery* from Corel. ●



Technology Hits The Museum

Remember those grade-school field trips to the museum? Remember how you had to follow your teacher through all those meaningless exhibits, only to find that the one you REALLY wanted to see wasn't included in the tour? Visitors to The San Francisco Museum of Modern Art will never

again wander aimlessly through the building, hunting for certain exhibits. The museum has added five interactive kiosks that greet visitors when they enter. With these kiosks, visitors can search the database for a specific artist, see a list of works on display by that artist, and find out in which gallery each work is located.

These kiosks, developed by Digital Collections Inc. (DCI), serve a dual purpose for the newly reopened museum. Besides educating museum visitors, the database, called *EmbARK*, also runs the collection management functions of the museum. This lets people do their jobs more efficiently while helping visitors find what they're looking for, says Katherine Pfaff, vice president of product marketing for DCI.



With intuitive point-and-click interfaces, these kiosks are friendly to anyone, regardless of computer literacy. When using the kiosks, visitors are able to see an actual image of the artwork on-screen by a click of the mouse and can use a magnifying glass to zoom in on a section of the image to see a more detailed picture. Hooked to this visual database are text screens that allow viewers to read scholarly information about the artist or work. Pfaff says the kiosks are primarily visual because "pictures tell more than text does."

Currently, the kiosks, which opened in January, only contain a sample set of 60 records, says Maria Misunas, assistant registrar for database administration. The records now in the kiosks consist of objects published in the exhibition catalog. Visitors can browse the catalog in order to figure out

which exhibits they want to see, then use the kiosks to find each work's location. The museum is continually adding new records to the kiosks in the effort to get each work recorded.

The Museum of Modern Art was able to install *EmbARK* when it moved to a building that was better equipped to handle the wires and cables that come with computer technology. The Museum is one of the first to use this program for collection management, though the database is now available on the open market.

For More Information:

San Francisco Museum of Modern Art
(415) 357-4186

Digital Collections Inc.
(510) 814-7200 ●

Get A Lesson In Inventions

Ever wondered how someone could think of inventing a telephone or computer? Or thought about how Henry Ford came up with the idea for the automobile? *Ideas That Changed The World* will answer these questions while giving you information about inventions that you take for granted.

This CD-ROM from Cambrix Publishing mixes text, graphics, music, and video to give users a look at how ideas and discoveries evolved to create the modern world. Users read about inventions ranging from automobiles and airplanes to internal combustion and electricity to medicine, vaccinations, and surgery. Interspersed in the text are options allowing users to watch a video about certain inventions or see pictures of the inventors

themselves. The illustrations were done by artist Robert Ingpen and are indeed one of the program's highlights.

Some categories, such as "Improving Man's Chances of Survival," have puzzles or games for users to play. For example, under *Advances in Medicine*, users can help the chattering teeth find their way through a maze filled with fluoride tablets. Roadblocks, such as cookies and apples, are found in the maze, making users choose the foods that won't harm their teeth while eating the fluoride tablets to clean them.

At the end of each category is a quiz that asks general questions about people and events discussed in the category to reinforce learning. The program rewards users by adding a piece to an unfinished puzzle when users

answer a question correctly.

Sound cards aren't required to view this CD-ROM. The program, however, has a soothing musical score that helps users concentrate, and all videos are coupled with narration and sound effects, such as jets refueling during flight.

This program's intuitive, point-and-click interface is easy to use, and users don't need to read an instruction manual. But don't think you can get by without any reading. *Ideas That Changed The World* is mostly text based, requiring users to do lots of reading to learn about the various inventions. Therefore, this program isn't intended for young children just learning to read.

We found this program enjoyable as well as educational, with its combination of simplistic games and somewhat complex



The invention of the jet engine is just one topic you learn about in *Ideas That Changed The World*.

explanations. *Ideas That Changed The World* will appeal to anyone, regardless of their age, interested in how modern technology came into being.

Ideas That Changed The World sells for \$29 and can be found in retail outlets across the country.

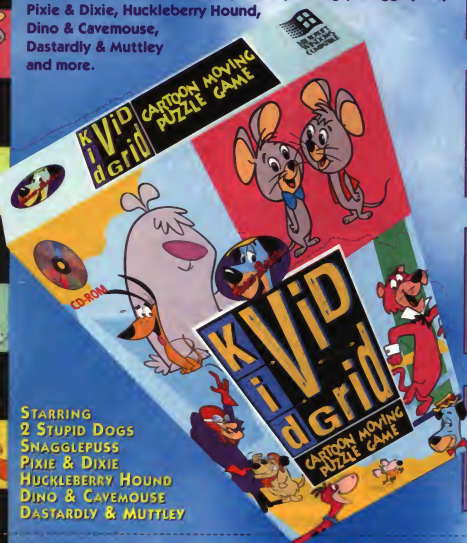
For More Information:

Cambrix Publishing
(800) 992-8781 ●

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SNAGGLEPUSS
PIXIE & DIXIE
HUCKLEBERRY HOUND
DINO & CAVEMOUSE
DASTARDLY & MUTTLEY



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SCREEN 2



SCREEN 3



SCREEN 4

Complete the form on
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6746 Valjean Ave.
Van Nuys, CA 91406

Enter Your Four Characters Below

1

2

3

4

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MULTIMEDIA**
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the name of a retailer
in your area,
(818) 780-3344

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Pollution Solution.



This symbol identifies energy-efficient computers that save you money and reduce air pollution by "powering down" when not in use.

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Buy It And Save.

Personalizing Your DOS Prompt



Day after day the same old DOS prompt stares back at you—the one that indicates the current drive and directory. Did you know that you can change the look of your DOS prompt by adding a few simple words to one of your computer's system startup files? It's easy and it's fast, so why not take a stab at personalizing your prompt?

You can make your prompt say something like "Bob's Computer" or you can display the date and time. Some folks like to add funny messages that have special meaning for them.

■ The Tools Of The Tradeoff

All you need is DOS and about 10 minutes of your free time. But before we begin, let's look at how that DOS prompt of yours is displayed.

When your computer first powers up, it runs a file called `Autoexec.bat`. This batch program file is found in the root directory of your C: drive. It's called a batch file because it is designed to run a whole batch of DOS commands without requiring you to type them in over and over again! The look and feel of your computer's DOS prompt is controlled by one of the commands found in this batch file.

■ Making The Change

You can change your DOS prompt so that it will display just about anything in text. Here's a brief run-down of things you can display: "You Buy and I Fly!" or "I'm Juliana's Computer!" If you can display the characters on your screen, you can create your own tailored DOS prompt with those same characters.

You can display the equal sign (=), dollar signs, the current time and date, the current drive and path name (this is the popular standard). Display the version of DOS that you're using. Exhibit the greater than (>) character, the less than (<) character, or even the "pipe" sign (|). You can use all of these single characters to format your DOS prompt, alone or along with text that you'd like to display!

How do you do it? Well, in DOS 5.0 and 6.0, you simply type `edit autoexec.bat` at your DOS prompt and press ENTER. This will allow you to open this file and edit or "change" the contents of the information inside. In MS-DOS 6.2, you use a special text editor we here will call The Editor. Or, you can use a text-editing program that may be packaged with DOS utility software you may have purchased separately, such as Central Point Software's PC Tools.

To open the Editor, type `edit` at the DOS prompt and press ENTER. (If you get an error message, try switching to your DOS directory and running this program again. If it still doesn't work, you either don't have MS-DOS 6.2 on your computer or you don't have The Editor installed.) Press ESC to get rid of the pesky dialog box that pops up so that you see a big, blank screen with a simple menu bar at the top. Select the File menu by clicking it or highlighting it and pressing ENTER, then select the Open command. In the next menu you see, select `Autoexec.bat`, then click the OK button.

■ Customizing Your Own Text Message

To change the DOS prompt so that a text message appears, you need to change the information behind the `PROMPT` command. For example, you could type in:

```
PROMPT HI! or PROMPT MY NAME IS SHIRLEY
```

as a separate line within the `Autoexec.bat` file. You can display your favorite text message as long as you precede it with the word "PROMPT." Don't forget to leave spaces between the command and the text message. And remember to type the text just as you want it to appear, in "all caps" or lowercase letters.

■ Displaying The Date Or Time

If you want the current date or time displayed as your DOS prompt, just use these commands:

```
PROMPT $D
```

to display the current date, or

```
PROMPT $T
```

to show the current time.

Other characters following the dollar sign can show other information. For example, use `PROMPT $V` to make the prompt show what version of DOS you are using. Or, use `PROMPT $N` to show the current drive in use, and `PROMPT $Q` for an equal sign (=). You can even combine commands, such as `PROMPT $D $T`, to display mixed information (in this case, date and time) at a single prompt.

■ Saving & Using A New DOS Prompt

Once you've changed or added a new `PROMPT` command to your `Autoexec.bat` file, you should save the file (by selecting the File menu and then the Save command), exit the `Autoexec.bat` file or The Editor (if you were using this program), and restart your computer.

Once your PC is through booting, your new DOS prompt should appear just the way you like it. And thanks to your computer's `Autoexec.bat` file, you should never have to make a change again unless you have a mind to! ●

by Robert Mullen

Challenging DOS Shell To A Dual Display

Most of the time, seeing double is not necessarily a good thing, especially when it comes to overdue bills, parking tickets, screaming children, flat tires, or mothers-in-law. However, seeing double in the DOS Shell can be a good thing. A special feature called Dual File Lists makes copying and moving files in DOS a breeze. In fact, it can be as simple as a few mouse clicks or keyboard strokes.

■ Dual File Lists

To refresh your memory, the DOS Shell is a DOS program that gives you the convenience of Windows with the speed of DOS. It's a graphical user interface (GUI) that operates in the DOS environment. It works with MS-DOS 4.0 and higher (although you may have to load it separately with DOS 6.0 and later). With it you can execute DOS commands by using your mouse or the arrows on your keyboard to point and click, rather than typing complicated commands and file pathways.

The standard DOS Shell screen displays a directory tree made up of directories and subdirectories, a list of files, and access to other DOS programs. However, when you turn on the Dual File Lists option, your view changes. Instead of seeing one directory tree and one file list, you see two dualing directory trees and file lists.

You can display the same drive, directories, and files in these dualing windows. Or, you can display different drives, different directories, or different files.

Just what good is seeing double? Suppose your hard drive is drive C: and you want to see a list of C: drive files. At the same time, suppose you would like to see a list of files on your floppy diskette in drive A:. You can use the Dual File Lists feature to display the C: drive files in one file window and the A: drive files in the other file window simultaneously. Then, by using the Dual File Lists, you easily can copy or move files on the diskette drive to the hard drive. Simply use your mouse to "drag" the files from the floppy drive to the hard drive, or vice versa.

But it doesn't just work on drives. You also can use the Dual File Lists feature to copy or move files from one directory to another directory. Display the source directory in one directory-tree window and the destination directory in the other directory-tree window. Then drag the files from one directory to the other (we'll talk more about this later).

■ Seeing Double

To start DOS Shell, type `dosshell` at the DOS command prompt. When the program opens, switch to the Dual File Lists by clicking your mouse on the View option in the menu bar at the top of the screen, or by pressing ALT-V. Next, select the Dual File Lists command by clicking it or by highlighting it with the arrow keys and pressing ENTER.

Automatically, the list of DOS programs at the bottom of the screen will disappear. Meanwhile one directory tree and file list will appear in the upper half of your monitor screen and another will appear in the lower half of your screen.

(When you want to return to a single file display, open the View menu again and select Single File List or Program/File Lists.)

■ Copying Files

Suppose you want to copy a file named `Myletter.doc` from a floppy diskette in drive A: to a directory you have created and named `DOCUMENT` on drive C: First, you want to make sure the upper Dual File Lists window is set to drive C: Click your mouse on the C: icon above the directory tree in the upper window or highlight it and press ENTER to see the items on this drive. (If the `DOCUMENT` directory that you created does not appear in the upper directory-tree window, scroll through the window until it does.) Next, set the lower Dual File Lists window to drive A: Now you are ready to copy the `Myletter.doc` file.

Use your mouse or the keyboard arrows and TAB key to highlight `Myletter.doc` in the A: drive files in the lower window. A small arrow should appear to the left of the selected file.

Next, if you are using a mouse, place the cursor on `Myletter.doc`. Press the left mouse button and hold it down. Now move, or **drag**, the cursor to the `DOCUMENT` directory name in the upper directory tree.



Release the mouse button. A dialog box will appear asking you to confirm that you want to copy Myletter.doc from drive A: to the DOCUMENT directory in drive C. If that is what you want to do, select YES to approve the copy.

If you don't have a mouse, highlight Myletter.doc with the arrows on your keyboard. Next, select the File menu, then select the Copy command. A dialog box will appear instructing you to enter a target pathway. Since you want the file copied to the DOCUMENT directory on the C: drive, you would type c:\document and press ENTER.

If you did all the steps correctly, Myletter.doc should now appear in the top files list under the DOCUMENT directory. And since you only copied the file, it should still appear in the A: drive files window.

Want to copy all the files on a diskette in drive A: to your hard drive in one smooth operation? That's not too difficult. First, activate the bottom file-list window (the one showing the A: drive files) so it is highlighted. (Either click your mouse somewhere in the window or use the TAB key to move from window to window.)

Next, open the File menu and select the Select All (files) command. This should highlight all the files in the A: drive file-list window. Now, put your cursor on any of the highlighted files. Follow the same procedure you did to copy the Myletter.doc file to the DOCUMENT directory on drive C: using either your mouse or your keyboard. (Remember to use the C:\DOCUMENT pathway when utilizing your keyboard.) When you are finished, you should see all the files listed in the drive A: window also listed in the drive C: DOCUMENT directory.

■ Moving Files

Moving files with the Dual File Lists is similar to copying files. However, when you move files, they are copied to the target disk or directory and then deleted from the source disk or directory.

To move a file, for example, Myletter.doc, use your mouse or keyboard to highlight Myletter.doc in the bottom files window (for drive A:).

If you are using a mouse, place the cursor on Myletter.doc. Next, drag the file (by pressing the left mouse button and holding it down). As you drag Myletter.doc, press the ALT key and hold it down. Drag the cursor to the DOCUMENT directory listing in the top directory-tree window. Now release the ALT key and the mouse button. A confirmation dialog box will open so you can approve the move if it is what you want to do. If everything went as planned, Myletter.doc will appear in the DOCUMENT directory on drive C: and will no longer appear in the A: drive file list.

If you are using your keyboard to make the move, you will want to open the File menu and select the Move command. Next, fill in the target pathway information in the dialog box (in this case, C:\DOCUMENT). Next, move the cursor to OK and press ENTER.

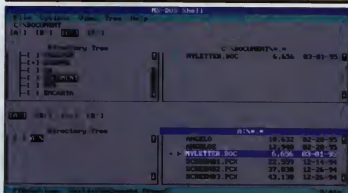
Perhaps you want to move all the files from drive A: to the DOCUMENT directory on drive C: In that case, just select the Select All feature in the File menu. Then follow the Move procedure you just completed.

■ Working With Several Select Files

You can copy or move several selected files rather than just a single file or all the files in a directory.

If the files you want to work with are adjacent and you are using your mouse, first place the cursor on one of the files you want to select and highlight it. Then press down on the SHIFT key as you move your

When you copy Myletter.doc from the A: drive to the DOCUMENT directory on the C: drive, the Dual File Lists shows that the file appears in the new directory as well as in its old location.



cursor over the next adjacent file you want to include. Release the key and click the mouse. Both files should be highlighted. Repeat this procedure until you have highlighted all the adjacent files you want to move or copy. If you are using the arrow keys on your keyboard, hold the SHIFT key down as you move the down arrow through the set of files you want to copy.

Once you have finished selecting files, follow the same procedure you used to copy or move all the files from drive A: to the DOCUMENT directory on drive C:.

What if the files aren't adjacent? No problem. Follow the same procedure that you just used to copy or move a set of adjacent files with your mouse. However, use the CTRL key instead of the SHIFT key when selecting files.

Selecting files using the keyboard gets complicated here. First, highlight the first file and press SHIFT-F8 once. Notice the word ADD appears on the bottom right of the screen. Use the arrows to move the keyboard cursor to the next file you want to select. Then press CTRL-SPACEBAR to select it. After making all your selections, follow the same procedure you used to copy or move files with the keyboard. (When you are finished, you can remove the ADD option by pressing SHIFT-F8 again.)

■ In Summary

Use the DOS Shell Dual File Lists when you want to copy or move a file or a group of files from one location on your hard drive to another. Or use it to move a file or files from one drive to another. Using this technique with a mouse makes file management as easy as using Windows with the speed and efficiency of DOS. You can use the Dual File Lists to move or copy files with just a keyboard if you don't have a mouse, but you may find it is not as smooth and easy as using a mouse.

And if you discover that you like using the DOS Shell, add it to the end of your Autoexec.bat file (an important file that DOS reads every time you start your computer). That way it will be ready for you to use every time you boot your computer. ●

by Mike Angelo

Using The DOS Prompt With Windows and Without

Like Laurel and Hardy, Fred and Ginger, Jagger and Richards, through thick and thin, DOS and Windows are partners working together in your computer to create and manipulate data. And like any good team, there are times when a solo act is in order; in the case of DOS and Windows, there are times when DOS needs to act independently of Windows.

As you may have discovered, you can use DOS while Windows continues to run in the background. This is part of Windows' multitasking capabilities. But as we will show you, in some instances, it is best to exit Windows to work with DOS.

■ With Windows

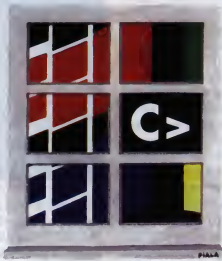
One simple task that can easily be executed from the DOS prompt while Windows is active in the background is DOSHELL. The DOS Shell enables you to see where your files are located in a directory tree, similar to the File Manager in Windows. It also lets you organize those files and directories.

In addition, there are a number of DOS operations and commands you can perform from the DOS prompt within Windows. You can check the date and time or the DOS version you are using. Or, you can edit DOS system files, check for viruses, delete programs, or copy files.

■ Without Windows

But in most instances, any time you tweak the manner in which DOS operates, you will want to do so from the true DOS prompt. Windows has a symbiotic relationship with DOS; changing that relationship while Windows is running is not a good idea. There are some DOS commands you should not execute while Windows operates in the background, as these commands can alter the Windows operating files. These include CHKDSK, SCANDISK, UNDELETE, CHCP, and add-on utilities such as disk optimization. Other commands that you will not want to use with Windows are JOIN, ASSIGN, FASTOPEN, PRINT, and SHARE.

It's also not advisable to operate Microsoft Diagnostics while running Windows. This program tells you all about your computer. For example, if you have a question about your computer while talking with a customer service representative, MSD will tell you many important bits of information, such as how much conventional or extended memory is available and what hardware is installed on your system.



While it won't damage MSD to operate it from the DOS prompt in Windows, the information may be somewhat distorted.

■ If In Doubt . . .

If you are going to continue to use non-Windows applications, Windows can construct a **program information file**, or PIF, for each of these programs. These files instruct Windows how to interact with non-Windows applications. Often times, Windows does not need a PIF to run a DOS-based application, but this is one way to alleviate potential problems.

There are times when it might not be prudent to launch an application from the DOS prompt while Windows is still active. The best example of this is when you haven't operated a

DOS program in this manner previously. Some programs may have bits of code or arcane DOS commands embedded within them that Windows won't like. You won't know this unless you have attempted to use the program while Windows is in the background.

If there is a conflict between your application and Windows, the screen will lurch back to Windows and display an error message. Most often, this will mean losing any work you haven't saved. All you can do is either reset your computer or "warm boot" it by pressing CTRL-ALT-DEL.

More often than not, if you're going to do a great deal of work in a DOS-based application, it makes sense to give Windows a rest and work solely from within DOS. However, there may be occasions when you want to cut and paste between a DOS application and a Windows application. That's fine.

The biggest challenge to your system when it is running both Windows and DOS applications is how to allocate the available memory. Unlike programs written specifically for Windows, applications written for DOS do not share random-access memory, or RAM. For that reason, DOS programs often hog memory and place limitations on the number of programs you can run simultaneously.

Crashing and memory problems you don't need. Your best bet may be to quit Windows and work from the true DOS prompt when you need to work in a DOS-based application.

There's no reason you can't enjoy the best of all your computing tools, but there are some times that DOS simply works best on its own. ●

by Linda Dailey Paulson



It's not a good idea to operate Microsoft Diagnostics, or MSD, from Windows' DOS prompt because the information may be distorted.

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DOS

Command Dictionary

How To Use Different DOS Commands



APPEND

The APPEND command sets a search path for locating data files. It lets programs open data files in a specified directory, called an **appended directory**, as if those files were in the current directory. The **current, or active, directory** is the one in which you are currently working.

Files are found using **paths** (or routes) that DOS follows to search through groups of directories and files. In order to access a file from a directory, you must be working in that directory. When you first turn on your system, you are in the root, or main, directory at the C> prompt. The prompt may also look like this: C:\>. The backslash represents the **root directory**, the main directory in DOS. When you want to change to another directory, type **cd** and the directory name at the prompt and press ENTER.

To append directories, type the APPEND command followed by a space, then the appropriate drive, a backslash, and the directory name. The following command will allow programs to open data files in the NEWS directory (which is on a diskette in the B: drive) as if those files were in the current directory.

```
append b:\news
```

If you'd like to append multiple directories, separate the directory names with a semicolon (;).

To see a list of appended directories, type **append** and press ENTER. To cancel the existing appended directories, type **append;**.

APPEND is available in DOS 3.2 and higher. There are some switches that can be added to the APPEND command for different results. Switches are typed after the command name, and after the drive and path when they are used.

The **/x** switch is available only in versions 3.3 and above. It lets you run applications from appended directories even when none of those directories are the current directory.

The **/path** switch controls whether a program will search an appended directory for a data file even if you have already specified the drive and directory with the file name. These files are processed when the path switch is on.

The **/e** switch gives DOS access to a list of appended directories. This switch can only be used the first time the APPEND command is executed after starting the computer. After that, you'll get an Invalid Switch error message.



DISKCOPY

To see a list of appended directories, type **set** at the prompt and press ENTER. At the bottom of the list that appears you'll see the word APPEND followed by the list of appended directories.

DISKCOPY, introduced in DOS 2.0, is a handy command used for copying one floppy diskette to another. (Sorry, no hard disks allowed.) Using it is as simple as giving the DISKCOPY command followed by the drive containing the source followed by the drive containing the destination disk:

```
diskcopy [source diskette drive] [destination diskette drive]
```

In order to copy the contents of the diskette in drive A: to the diskette in drive B:, type:

```
diskcopy a: b:
```

at the DOS prompt. If you do not specify source and destination drives, DOS will use the current drive (whichever one the diskette is in) as both, and will prompt you to switch diskettes periodically within that drive as it copies the information.

The addition of the **/v** switch at the end of the command will ensure that the data copied is correct.



MSAV

MSAV is a DOS 6.0 command that scans your system for computer viruses.

A **virus** is a program that "infects" computer files by attaching itself to other programs or data. Viruses are usually intended to disrupt processing of information on a computer. They reproduce themselves and spread to software that is not yet infected.

After the MSAV command, type a drive letter followed by a colon to tell the command which drive to scan for viruses (for example, **msav c:**). The current drive is scanned if no drive is specified.

There is a long list of switches that can be used with MSAV. The **/s** switch scans the drive, but does not remove any viruses that are found. Viruses are found and removed with the **/c** switch. To scan all drives except A: and B:, use the **/a** switch. Use **/l** to scan local drives, but not network drives. (When you're on a **network**, a group of connected computers that share information, a **local** drive is one that you access on your computer but that other members of the network cannot access. The network drive, on the other hand, can be accessed by everyone on the network.)

To create a report based on MSAV information, add the `/r` switch. This creates the `Msav.rpt` file, which lists the number of files scanned by MSAV, the number of viruses found, and the number of viruses removed. The file is placed in the root directory. Any switches used with the MSAV command are placed after the command name, and after the drive letter when one is used (for example, `msav c:\`).



MSD

MSD (Microsoft Diagnostics) is a DOS 6.0 command. Use it to display technical information about your system.

You can access the MSD interface on-screen to obtain information, or use MSD to compile data into a report. Either way, you can access details about your system's processor, memory, version of DOS, mouse, disk drives, device drivers, and other system specifications.

MSD's main screen contains buttons that you press to access information on different specifications. To start the MSD program, type `msd` at the prompt and press ENTER.

Switches can be added to the MSD command to make reports that contain technical data about your system. To create a file named `Computer.txt` to hold the report, you would type

```
msd /p computer.txt
```

and press ENTER. You can add your name, address, phone number, and other data to the report by using this command line:

```
msd /f computer.txt
```

The program will prompt you to enter information.

The `/s` switch creates a summary report. When you do not add a switch, the report will appear on-screen.

The `/i` switch is used when you're having trouble starting MSD or if it's not running properly. And the `/b` switch runs MSD in black and white for monitors that do not display MSD color correctly. All switches are typed after the command name, followed by a drive and directory name, if necessary.



RMDIR

Introduced with DOS 2.0, the RMDIR, or RD, command is basically a hard drive maintenance tool that's used to eliminate directories, subdirectories, and files.

Before a directory can be removed, all of its files and subdirectories must be deleted. For example, if you want to delete a subdirectory of expense accounts you have in *Lotus 1-2-3 4.0* called EXPENSES in your SALES directory, you first need to delete the individual files. To do this, type:

```
c:\123r4d\sales\expenses\del *.*
```

DOS will display a confirmation message that reads, "All files in current directory will be deleted! Are you sure (Y/N)?"

The `*` after the DEL (delete) command is a wildcard that tells DOS to

delete everything in the EXPENSES directory. (Wildcards are symbols used in DOS to represent characters. The asterisk is used to represent any number of characters, while the question mark represents one character. For example, `*.wk3` tells DOS to look for any files with the .WK3 extension. `Sales.wk?`, in which the question mark could represent a single digit, tells DOS to look for any Sales files with an extension of .WK and another digit.)

Now you can delete the EXPENSES subdirectory. One important note about RMDIR/RD is that you cannot remove the current directory. To change directories, type `cd c:\` at the DOS prompt and press ENTER. To remove the EXPENSES directory, type:

```
rd \123r4d\sales\expenses or rmdir \123r4d\sales\expenses
```

at the DOS prompt and press ENTER (you will not be given a confirm message as you were with the DEL command). Now when you use the DIR command to view your SALES directory in *Lotus*, you will no longer see an EXPENSES directory.

If you want to delete the entire SALES directory in *Lotus*, you would follow the same steps.

If you have DOS 6.0 or later, you can save several steps with the DELTREE command. With this command and the above scenario, you would type:

```
deltree \123r4d\sales\expenses
```

DOS will display the message, "Delete directory '\123r4d\sales\expenses' and all its subdirectories? (Y/N)". Type your response and DOS will then display the message "Deleting \123r4d\sales\expenses..."



TREE

You've seen drawings of family trees, with relatives connected by lines. The TREE command displays DOS' version of a family tree, graphically showing the connections between directories and the system's structure.

To use TREE, type `tree` at the DOS prompt followed by the drive or path you want displayed. If you don't specify a drive or path, the current directory will be used. You can use the `/f` parameter, which would cause the names of files in each directory to be listed as well. And if you use `/MORE` after the parameter, the directories will be displayed one screen at a time.

Examples of the TREE command, which was introduced with DOS 3.2, are:

`tree` (which would display the directory structure for the current directory).

`tree b: /f /more` (which would display the directory structure for the diskette in the B: drive; all file names would be included, and the information would be displayed one screen at a time). ●

In Search Of True Multimedia

As multimedia races to become the most-used English word since "the," software makers are pumping out waves of the little reflective compact discs you thought were for your stereo. These CD-ROM discs—masters of sounds, pictures, and text—march across store shelves promising sensory experiences beyond the imagination. But that shiny, new (and often expensive) disc won't necessarily make your computer dance the lambada. The "M" in CD-ROM stands for memory, not multimedia, after all.

In fact, more than a few CD-ROM programs are basically identical to their boring 3.5-inch diskette brethren. With consumers enraptured by CD-ROM technology, though, companies are slapping the majority of new software on disc—even programs better served by diskette.

pecting symphonies and animation wizardry, often are disappointed by more than a few CD-ROM offerings.

■ CD-What?

When choosing CD-ROM software, it helps to know exactly what you're considering. CD-ROM, or compact disc, read-only memory, is a form of data storage that uses laser optics rather than magnetic means.

"Compact disc" refers to the storage medium itself; CD-ROMs look like audio CDs. "Read-only memory" refers to the fact that most computers cannot "write" to a compact disc they way they can to diskettes. You can store all sorts of files to a diskette with a diskette drive, but a CD-ROM drive only can read information from the disc. Read/write

to store vast amounts of information makes it great for pure text as well. Many CD-ROM book collections, for instance, are popular not because of fancy whistles and bells, but simply because one disc can store information from dozens of books.

■ CD-Rebirth

With the average Joe Windows more and more likely to sport a CD-ROM drive on his new computer, compact discs become a good way to push old software. For example, a manufacturer might take a word processor, utility, or game that had been selling on diskette and create a CD-ROM version.

Another tactic is to slap a few extras into a program and market it on CD-ROM. Many recent applications sport these slightly improved CD-ROM alter egos. The latest version of *Quicken*, a popular home finance program, is available on both diskette and CD-ROM. The only difference is the compact disc version includes "multimedia tutorials" and on-screen user manuals as opposed to the static user guides shipped with the diskette version. Some users may find the extra help worthwhile, but it comes at a cost—we found the *Quicken* CD-ROM selling for about \$7 more than the diskette set.

In the realm of gaming, CD-ROMs have potential but face a demanding audience. With the success of adventure CD-ROMs such as *Myst*, many game publishers attempt to breathe new life into older games by piecing in multimedia sequences and packaging the hybrid on compact disc. Unless programmers design a game with multimedia in mind from the ground up, though, the results are mixed. Maxis produced a CD-ROM version of its best seller *SimCity*, but many players find the interspersed live-action segments interfere with game play rather than enhance it. Haphazard multimedia isn't necessarily better than no multimedia.

Despite the growing pains, CD-ROM technology represents an exciting development for games, educational tools, and all other types of software. Some of the newest multimedia offerings are truly taking advantage of animation, text, and sound rolled into a single package.

While you still have to take some claims of "multimedia" with a grain of silicon, CD-ROMs are here to stay. The M-word is finally beginning to live up to its overused name. ●

by Alan Phelps



The "CD-ROM Version!" slogan on the box becomes a selling point in an overhyped market.

The truth remains that multimedia is, at best, a loosely defined term. One definition calls multimedia the combination of text, video, audio, and animation in an interactive computer program. But any program that contains text and lets out a "beep" now and then could be multimedia in the strictest sense of the word. That's not to say most CD-ROMs don't go beyond the basics. Many programs even come close to delivering the goods promised in those splashy magazine ads. But today's software buyers, ex-

pecting symphonies and animation wizardry, often are disappointed by more than a few CD-ROM offerings.

Despite the read-only drawback, CD-ROMs have several advantages that lend themselves to multimedia applications. First, they can hold volumes more information than diskettes (a CD-ROM disc can hold 600 megabytes [MB] of data, compared to 1.4MB for a typical diskette). Second, CD-ROM drives can access data much faster than the standard magnetic hard drives found in most computers.

Multimedia isn't the only useful aspect of CD-ROMs, though. The compact disc's ability

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Top 10 DOS CD-ROM Titles

No Windows Required



Most of the personal computer world does Windows for good reason. Programs that run under Microsoft Windows' graphical interface are often easier to use and more powerful than their DOS brethren. DOS is an older standard, and programs that run under DOS are generally older and less sophisticated.

A vocal minority of people, however, prefer the less-complex DOS interface to that of Windows. And there are a surprising number of excellent CD-ROM titles designed specifically for DOS fans. The following selections offer programs for all interests from computer hobbyists to students to business users.

■ Toolworks Reference Library

This title, from the MindScope, is the DOS equivalent of *Microsoft Bookshelf*, the top-selling Windows CD-ROM reference title. Like *Bookshelf*, *Toolworks Reference Library* includes a number of useful works on one CD-ROM disc.

There are eight reference books in all: New York Public Library Desk Reference, Dictionary of 20th Century History, J.K. Lasser's Legal and Corporation Forms for the Smaller Business, National Directory of Addresses and Telephone Numbers, Webster's New World Dictionary of Quotable Definitions, Webster's New World Guide to Concise Writing, Webster's New World Dictionary, and Webster's New World Thesaurus.

Toolworks Reference Library isn't flashy—there are no multimedia features, not even any graphics. But the program is faster than most CD-ROM reference works. Though it's DOS based, it supports a mouse. To navigate the program, you select one of the reference works listed to the right of the screen. You also can search for subject matter using the AND or OR Boolean operators.

The DOS version of Toolworks Reference Library lists for \$79.95. A new Windows version should also be available by the time you read this.

Toolworks Reference Library, \$79.95

MindScope
(800) 234-3088
(415) 883-3000

■ New Grolier Multimedia Encyclopedia

This is the most comprehensive general-interest CD-ROM encyclopedia available today. On a single CD-ROM, it includes all the text in the 21 volumes of the hardback *Grolier's Academic American Encyclopedia*. You'll find 33,000 separate articles and 10 million words, more than in any other CD-ROM encyclopedia.

You won't find all the pictures that are in the hardback version, but the CD-ROM version does include more than 3,000 color and black-and-white images, from Michelangelo's David to Alaska's Columbia glacier. What's

more—and you won't find this in any hardcover encyclopedia—there are nearly 150 video and animation sequences and excerpts of 21 famous speeches. With some of the speeches, but not all, you view the speaker as you hear the speech.

The multimedia capabilities of *Grolier* are first-rate. You can view, for instance, footage of Neil A. Armstrong's first step on the moon. You can hear the best part of Martin Luther King's "I Have a Dream" speech. And you can view and hear Richard Nixon's farewell speech. By TV standards, the video is small and sometimes jerky, but you still get the picture.

You can have great fun browsing the encyclopedia. But when you need to get down to work and research a subject, you'll find the search facility to be friendly and sophisticated. You click on the magnifying glass icon and can, among other things, search for words using AND or NOT Boolean operators in article text, article titles, captions, or all three.

The 1995 version of *New Grolier Multimedia Encyclopedia* is available only in Windows and Macintosh versions. But the 1994 version, a terrific program in itself, is still on the market for DOS users. It lists for \$149.95.

New Grolier Multimedia Encyclopedia, \$149.95
Grolier Electronic Publishing
(800) 356-5590
(203) 797-3530

■ Science Navigator

This reference work is a combination of two hardcover books—the McGraw-Hill Concise Encyclopedia of Science & Technology and the McGraw-Hill Concise Dictionary of Science and Technical Terms.

The encyclopedia includes 7,300 articles written by, among others, 19 Nobel laureates. Also included are 1,200 graphic elements such as photos, line drawings, charts, tables, formulas, and chemical structures. The dictionary consists of more than 100,000 definitions.

The program doesn't include the flashy multimedia effects found in other CD-ROM products. There are no videos, no animation, and no sound. But the scope and depth of the information are impressive. The McGraw-Hill Science and Technical Reference Set covers 75 areas of theoretical and applied science. Much of the information covered is technical, but not all. There's a listing, for instance, for ice cream in the dictionary. "Dictionary" is a bit of a misnomer, since even the dictionary listings are several paragraphs long.

Navigating is much like moving around an outlining program. With your keyboard, for instance, you can use the up or down arrow keys to highlight a range of subjects, then press the right arrow key to expand this range. You continue to expand until you find the subject you want, then press the ENTER key.

Like all good CD-ROM products, *Science Navigator* includes tools not found in paper-based references. You also can use the search feature to find all references to a topic in all the articles and definitions. And you can use the program's hypertext links to quickly jump to a topic related to the one you're currently reading.

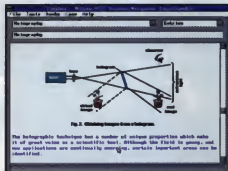
The program lists for \$149.95 and requires Super VGA graphics. *Science Navigator* also comes in versions for Windows, Macintosh, and networked computers.

Science Navigator, \$149.95
McGraw-Hill
(800) 722-4726
(614) 755-4121

■ Library of the Future

This CD-ROM title is more aptly named *Library of the Past*—it includes the complete, unabridged text of 1,750 of history's greatest literary works.

The scope of the material boggles the mind. It includes religious works such as the full text of



Science Navigator provides an impressive scope of information about theoretical and applied sciences.

the King James Bible, the Koran, the Egyptian Book of the Dead, and the Bhagavad Gita. Its political treatises include the complete Magna Carta, the Declaration of Independence, the Federalist Papers, and the U.S. Constitution. Literary works include the complete works of Shakespeare, Arthur Conan Doyle, and Edgar Allan Poe, and the full text of "Canterbury Tales," Milton's "Paradise Lost," Hawthorne's "Scarlet Letter," Emily Brontë's "Wuthering Heights," Shelley's "Frankenstein," Bram Stoker's "Dracula," Dostoevsky's "Brothers Karamazov" ... and hundreds more.

This wealth of wisdom is compressed onto one CD-ROM, which includes interfaces for DOS and Windows (a Macintosh version should be available by the time you read this). Surprisingly, loading and using the program is fast, though you won't find many multimedia flourishes.

One way to use the program is to find the title you want and display the text on-screen. You can list all the works included on the CD-ROM along with their authors, or instead list all the authors. Choose an author's name, and you're shown the masterpieces he or she has written that are included on the disc. You read the text of the individual works by scrolling down the screen instead of flipping

pages, as you would with a book. Some works include black-and-white line drawings with them, and there's limited video.

Another way to take advantage of the program is by using the sophisticated searching tools, which make this collection much more useful than poking around a dusty library. You can search for any word or various combinations of words within a single text, an author's collected works, a category of works such as religion or poetry, all the works in a given time period or from a particular country, or any combination of the above. For searching precision, you can optionally use the * or ? wildcards.

The program lists for \$149.95.

Library of the Future, \$149.95
World Library
(800) 443-0238
(714) 748-7197

■ Factomatic Business Library

This no-frills CD-ROM is a combination of four individual CD-ROM titles—*Executive's Factomatic*, *Sales Manager's Factomatic*, *Supervisor's Factomatic*, and *Negotiator's Factomatic*. Each includes a cornucopia of information for business people, not only facts but advice as well.

You won't find any video, animations, or still graphics—only text. But the text is hyperlinked, making it easy to move to related topics. And you can quickly search through all the text, looking for specific information.

The product uses MOST technology, which means it has interfaces for DOS, Windows, and the Macintosh. It lists for \$129.95.

Factomatic Business Library, \$129.95
Compton's NewMedia
(800) 862-2206
(619) 929-2500

■ PhoneDisc

This is the best of the national phone directories on CD-ROM. There are actually four different versions, each of which can be used with a DOS, Windows, or Macintosh personal computer.

PhoneDisc Residential, which lists for \$79 and comes on two CD-ROMs, includes more than 81 million residential listings culled from White Pages nationwide. Unlike with your long-distance phone company's directory assistance service, you can quickly search by name, regardless of where the person lives, or



There's no paper found in the well-stocked Library of the Future.

narrow your search by city, state, street, ZIP code, and/or area code.

PhoneDisc Business, which lists for \$79 and comes on one CD-ROM, includes 9.5 million business listings in 2,000 different categories. Among other things, you can find a business from just an address or phone number.

PhoneDisc Combo, which lists for \$129 and comes on three CD-ROMs, includes both the Residential and Business packages.

PhoneDisc PowerFinder, which lists for \$249 and comes on five CD-ROMs, includes all the residential and business listings plus additional searching tools, useful, for instance, if you're doing a direct-mail campaign.

If you have a modem, once you find the phone number you want, each of these packages can automatically dial it for you. Each of the products is updated quarterly for an additional subscription fee. You can print out unlimited business labels and up to 250 residential labels per month. Any labels after this cost extra.

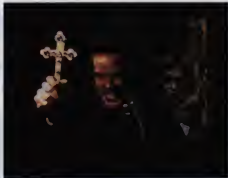
PhoneDisc, \$79
Digital Directory Assistance
(800) 284-8353
(617) 639-2900

■ Business America on CD-ROM

If you need to obtain more information about businesses than just phone numbers and addresses, *Business America on CD-ROM* is a terrific product. This CD-ROM, which includes interfaces for DOS and Windows, is used by many companies for direct-mail campaigns.

The disc is a database of 10 million businesses in the U.S. Each of these 10 million records consists of the following fields: company name, address, phone number, name of key decision maker and gender, lines of business, annual sales volume, number of employees, and whether it's a parent company, subsidiary, or branch location. You can export names, addresses, and other information into *WordPerfect*, *Microsoft Word*, *Lotus 1-2-3*, *dBase III*, or any program that can import comma delimited or fixed field formats.

There are various subscription plans. The most economical costs \$595. This allows you to browse all 10 million records, but you're limited to exporting up to 1,000 records. Each additional 1,000 records costs \$250. The database is updated every six months, and updates cost \$99 under the basic subscription plan.



■ Dracula Unleashed offers an entertaining cross between movie and game.

The product requires a 386 or faster PC and 25 megabytes (MB) of free hard disk space.

Business America on CD-ROM
American Business Information
(402) 593-4565

■ Masterclips 6000

This is an excellent CD-ROM collection of clip-art images, with interfaces for DOS and Windows. There are 6,000 color images plus an additional 1,100 black-and-white images. The color images can be easily converted to black and white if you have a black-and-white laser or inkjet printer.

Unlike some other clip-art collections, the images are all suitable for business use—you won't find any cutesy cartoons. Each image falls under one of 60 categories, from agriculture and computers to medical and travel.

The images are in the CGM and WMF formats. You can import them into any presentation, desktop publishing, or word processing program that supports these formats, then use the images in creating presentations, brochures, mailers, and newsletters. The manual includes copies of all the images. Looking through the manual is considerably more convenient than having to choose an image on-screen. The product lists for \$99.95.

Masterclips 6000, \$99.95
IMSI
(800) 833-4674
(415) 257-3000

■ Doom II: Hell on Earth

There are many DOS-based games distributed on CD-ROM, and this is one of the hottest. *Doom II: Hell on Earth*, which is

available through conventional retail channels, is a sequel to the popular *Doom* shareware game.

Parents take note: There's plenty of violence. *Doom II* is a shoot-'em-up game in which you blast monsters from outer space before they turn earthlings into flesh-eating zombies. You enter a lethal three-dimensional world, looking out from behind the eyes of a battle-hardened Marine. Moving through intertwining levels of shadowy corridors, staircases, chambers, and moats of toxic waste, you encounter assaults from hundreds of monsters armed with everything from pistols to fireballs to futuristic weapons.

The game comes with single-player and multi-player modes. If you have a modem, you can play it online with others. *Doom II* is available either on floppy disks or, along with the original *Doom*, on a CD-ROM. It requires 8MB of RAM and 20MB of free hard disk space. If you believe make-believe carnage is cathartic, *Doom II: Hell on Earth*, which lists for \$69.95, is a terrific choice.

Doom II: Hell on Earth, \$69.95
GT Interactive Software
(800) 362-9400
(212) 951-3000

■ Dracula Unleashed

Dracula Unleashed, an innovative interactive movie, picks up 10 years after the original *Dracula* story left off. You play the role of a Texan who has traveled to London with his fiancé to investigate his brother's death. You visit different areas of the city, including the insane asylum, looking for clues to the mysterious killing. Make the wrong move, and you can wind up dead yourself.

The CD-ROM includes more than 90 minutes of video footage and an original soundtrack. Creating the title involved building an actual movie set, including such props as a live 120-pound wolf. The program, which has a street price of \$59.95, comes in a package that can be used either on a DOS-based PC or Apple Macintosh computer. The DOS version requires Super VGA graphics.

Dracula Unleashed, \$59.95
Viacom New Media
(800) 469-2539
(212) 258-6000 ●

by Reid Goldsborough

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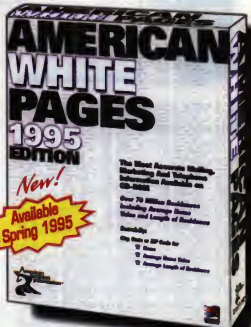
Name - by City, State, or ZIP Code

Median Home Value - by City or ZIP Code

Length of Residence - by City or ZIP Code

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The 10 Best CD-ROMs For Windows



If you're just starting your CD-ROM library, or if you are an avid collector, there are 10 programs to run with Microsoft Windows that no multimedia computer should be without.

We looked for graphical interfaces that make the information or functions they handle easier to use. We looked for lots of multimedia, and programs that stand out as the best in their class. What we came up with was an assortment of programs for money managers, film fanatics, sportsmen, cooks, kids, or anyone who wants to get the most out of their PC.



■ 1995 Grolier Multimedia Encyclopedia

When you need to get up-to-date facts and figures for that school report on Algeria, where do you turn? Most likely your handy encyclopedia. Grolier Electronic Publishing Inc. has an interactive, multimedia version of the Academic American Encyclopedia that may be your new reference source.

Of all the multimedia encyclopedias on the market, we chose the 1995 Grolier Multimedia Encyclopedia because of the content; Grolier has the most detailed articles and maps. The interface may not be as much fun or as kid-oriented as other encyclopedias, but it will get the job done.

If you know what you are looking for, Grolier has powerful search features that let

you search through 33,000 articles alphabetically, for a particular word, phrase, or category.

However, if you're looking for a real multimedia way to learn, Grolier has three new features—the Knowledge Explorer, Multimedia Maps, and PathMakers—that use multimedia essays with text, pictures, and narration to illustrate a topic or theme.

Knowledge Explorer essays show you how things work. For example, you could see how continental plates shift and create mountains. Multimedia Maps illustrate events in an animated timeframe. For instance, you could learn about the migration patterns of prehistoric humans. Pathmakers show you themes and people that have made their mark in six different fields. Each of the sections is represented by a modern-day pathmaker. For example, you can learn about Explorers and the Horizons of Discovery with Buzz Aldrin in several videos. You can read up on other explorers, viewing videos, graphics, and photos, or jump to related articles. Other Pathmaker sections include the Novel and the American Experience with Kurt Vonnegut, Jr., the Artist in the Modern Era with Helen Frankenthaler, or Great Sports Achievements of History with Jackie Joyner-Kersey.

If you're looking for an encyclopedia that really puts multimedia to work for a price of about \$100, Grolier has got it.

1995 Grolier Multimedia Encyclopedia, \$100
Grolier Electronic Publishing Inc.
(800) 285-4534
(203) 797-3530



■ Microsoft Bookshelf

"Just look it up." It's a nasty phrase we've all heard at least once in our lifetimes. However, Microsoft Corp. may have eliminated some of the nastiness when it released the *Microsoft Bookshelf*.

This interactive Bookshelf is full of reference materials: The American Heritage Dictionary, The Original Roget's Thesaurus, The Columbia Dictionary of Quotations, The Concise Columbia Encyclopedia, the Hammond Intermediate World Atlas, The People's Chronology, and The World Almanac and Book of Facts 1994.

All these references mean that you can look up a definition, find another word for the term, learn how the term might fit into the nation's history, read an encyclopedia article, and see a quotation featuring the term.

You can bring reference material to life with a few video clips, photographs, maps, more than 50 animations, 80,000 spoken pronunciations, 40 audio clips, and 160 national anthems.

One innovative feature that put this program on top was its Quickshelf. If you need more information on a term but don't want to leave the Windows program you are working in, click on the Quickshelf button bar at the top of your screen. Highlight any word in any Windows document to instantly view all types of information on it. It's a totally new way to "look it up," for about \$70.

Microsoft Bookshelf, \$70
Microsoft Corp.
(800) 426-9400
(206) 882-8080



■ The Sports Illustrated Multimedia Almanac 1995 Edition

StarPress Multimedia has a multimedia sports CD-ROM reference that everyone in the family will enjoy. The *Sports Illustrated Multimedia Almanac 1995 Edition* is a reference guide to such sports as baseball, football, basketball, hockey, tennis, golf, horse racing,

boxing, auto racing, soccer, the Olympics, swimming, NCAA sports, track and field, figure skating, and skiing.

When you choose a sport in the Almanac, you have many options in each section. A Year in Review details the big events of the past year with photos and videos. A Gallery puts all the photos and videos of the season in one place. The 1993-94 Season gives such statistics as the final polls, bowl results, awards, leaders, team leaders, or game highs. A Record Book tracks past award winners, who holds what records, coaches with the best winning records, and national champions. There's also a Trivia Quiz of multiple choice questions.

If you are a fan of *Sports Illustrated*, the magazine is even online in its own section called SI Magazine. Click on a cover of *Sports Illustrated* from Oct. 4, 1993 to Sept. 26, 1994 to page through it.

Rounding out the program is an all-encompassing Media Gallery, Trivia Quiz, and Year in Review (which recaps all major events from the end of the baseball season to the Harding-Kerrigan scandal, and the O.J. Simpson story).

The SI Multimedia Almanac, for about \$35, is a good, overall sports reference with colorful photographs you could only find in *Sports Illustrated*. Programs dealing exclusively with one sport may have more facts and statistics, but lack variety. This program could use a few improvements, such as a few more videos and trivia questions to keep our attention over the long haul. Another obvious flaw: the information will be outdated in a year or two.

The Sports Illustrated Multimedia Almanac, \$35
StarPress Multimedia
(800) 782-7944
(415) 274-8383



■ Scholastic's The Magic School Bus Explores the Solar System

"The wheels on the bus go round and round..." Well, not exactly in this new title

released from the Microsoft Home line of kids products, which sells for \$50. Rather, the wheels in *Scholastic's The Magic School Bus Explores the Solar System* don't move much at all—the rockets do the work.

Based on Scholastic's "The Magic School Bus" series, the program features Ms. Frizzle and her class. As they take the magic school bus on a field trip, supposedly to the planetarium, they blast off into outer space. Along the way, Ms. Frizzle gets separated from the bus and it's your goal to find her.

Travel through space, read the 10 planetary school reports, or click Liz the Lizard for Help. When you land, the other students will give you more funny facts. Or, you can do a science experiment, for instance, to see how many planets it takes to equal one Jupiter. Then play games at the stops to win tokens. On Saturn, you can jump from ice block to ice block until you gain a token. Tokens equal clues to the Frizz's location, although everything in the program is a clue to where she might be.

We were impressed with the realistic fly-by videos from NASA and the Jet Propulsion Laboratory. We also liked the "clickables," which are on-screen objects you can click to make them move or blast off.

Scholastic's The Magic School Bus Explores the Solar System, \$50
Microsoft Corp.
(800) 426-9400
(206) 882-8080



■ I'll Get-It

It'll answer your phone, receive messages for each member of your household or office in separate voice mail boxes, and keep a directory of phone numbers and ring them for you. Sound cool? It's *I'll Get-It!* by Moon Valley Software and it's available for PC or Macintosh systems for around \$70.

The hardware part of the program is not hard to set up—you just need a computer with a sound card, modem, and microphone. I'll Get-It! plugs into your phone and computer without requiring you to tinker inside your PC.

Record your own messages or use one of the prerecorded messages. Some are celebrity

impersonator messages that will ask callers if they "feel lucky" or tell them "to come up and see me sometime," and some can be translated to Spanish, German, or Japanese.

Messages are kept in Incoming message boxes with the date and time they were received, and hang-ups are erased for you. When you're away from home, you can call in to get your messages or program I'll Get-It! to call you at a different phone number.

The CD-ROM version of I'll Get-It! also comes with Pro CD's *Phone Free*, a business directory of 800 numbers in the U.S., and *Icon Hear It Too! Lite*, a utility that lets you add sound clips, screen savers, wallpaper, and animated icons and cursors to your Windows desktop.

I'll Get-It!, \$70
Moon Valley Software
(800) 473-5509
(805) 781-3890



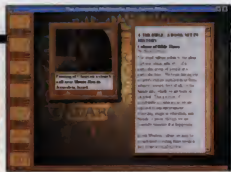
■ The Complete Multimedia Bible

How about adding the Book of books to your CD-ROM collection? Compton's NewMedia has taken its popular Compton's Encyclopedia interface and combined it with the King James Bible to create *The Complete Multimedia Bible*.

For that old-fashioned, Good-Book feel, *The Complete Multimedia Bible* features yellowing pages, the words of Christ written in red, and the voice of James Earl Jones.

An Introduction and Information section features essays on the role of the Bible, chronologies, summaries, study plans, and Bible facts. The King James Bible section contains the actual text of the Bible, book by book, chapter by chapter. Guidance and Inspiration cites passages from the Bible by topic. Here you can see what God had to say about topics such as faith, divorce, hope, prayer, and temptation. The Maps section lets you pull up maps to see such things as the path of Jesus' trial and crucifixion, or the twelve tribes of divided Israel. A Multimedia section gives direct access to all the sounds, pictures, graphics, and maps in the program. There's even full-motion, narrated video of recent times in the Holy Land.

The Complete Multimedia Bible contains the full text of the King James Bible along with video, sound, maps, photographs, and many other extras.



The interface contains many buttons and windows to make the information easy to access. There are also several ways to search for specific passages, articles, or study guides. You can jump straight into a book or chapter of the Bible or an article. A Topic Tree lets you search by categories, like The Word, Satan, or Miracles and Signs. The Idea Search lets you look for a particular word or phrase, or ask a question and the program will search for the keywords in your question and pull up a list of related articles.

We liked The Complete Multimedia Bible (which sells for about \$35) not only because of the multimedia features and the attractive interface, but because it offers a lot more than just the text of the Scriptures. There are study guides, worksheets, a picture tour of photographs, and a built-in dictionary. You can add your own notes inside the program with a Notebook feature, and an Atlas displays a current map of the world so you can check locations in today's world.

The Complete Multimedia Bible, \$35
Compton's NewMedia
(800) 284-2045
(619) 929-2500



■ Quicken Deluxe 4 for Windows CD-ROM

Every household and office has one thing in common—it has to manage its finances. What better way to do it than through a best-selling, award-winning finance package that uses

multimedia to teach you how to better keep track of your money?

Intuit's *Quicken 4 Deluxe for Windows* CD-ROM has all the personal finance extras you need to run your small business or household. Just like the diskette version, this program lets you keep track of your bank accounts, bills, credit cards, and income through an interface that lets you enter the information as if you were filling out a checkbook. Remind yourself of upcoming bills you have to pay or schedule recurring transactions, like your home mortgage payment or weekly paycheck. Set up a budget and see where your money is really going. Print checks as you fill them out on-screen. You can keep track of your net worth; calculate how much you might lose or gain on a new loan, a new investment, or retirement savings; and keep track of transactions you will need to reference at tax time. Then create real reports and graphs to get the real picture of your finances.

The CD-ROM version offers something you can't get with the diskette version—talking tutorials in which Intuit experts appear on-screen and talk you through new tasks, and on-screen user manuals. The Deluxe CD-ROM provides other extras like the Home Inventory program, an Electronic Stock Guide, the Mutual Fund



Selector, the Quicken Tax Guidebook, and Advice for Financial Experts.

The Quicken Deluxe CD-ROM may not be bulging at the seams with multimedia and video, but it uses what it has effectively to help you learn all the features. And for about \$60, it does include all those extras that would cost a bundle if you had to buy them separately.

Quicken 4 Deluxe for Windows CD-ROM, \$60

Intuit
(800) 624-8742
(415) 322-0573



■ Myst

Because Windows slows down game play, most entertainment titles are written for DOS, leaving few choices for Windows users. However, among those available, *Myst* by Broderbund (which sells for about \$40) still tops the list.

The surrealistic island world that features realistic graphics creates an eerie program that requires wits and logic, not hand-eye coordination, to succeed.

The program features Atrus, creator of *Myst* and many other worlds. Atrus has discovered that one of his sons is destroying his worlds. You explore the island, picking up objects with a click of your mouse. Scraps of paper, rocks, and sounds all hold a clue to the mystery of whodunnit—or is doing it. At first you may feel lost, but as you stumble upon clues and connections, you will get hooked. Although the program may be a little above the heads of younger children,



Quicken 4 Deluxe for Windows CD-ROM uses multimedia through talking tutorials that walk you through program features.

parents don't have to worry about any blood and guts in this game.

Myst, \$40
Broderbund
(800) 521-6263
(415) 382-4600



■ The Southern Living Cookbook, Multimedia CD

It's a problem that faces every family every day—what's for dinner? Lifestyle Software Group has the interactive answer for about \$35 that makes meal planning seem like less work.

The *Southern Living Cookbook, Multimedia CD* contains more than 1,300 recipes for foods such as Angel Biscuits, Cream Cheese Lasagna, Chocolate-Almond Meringue Fingers, Fried Green Tomatoes, Oysters Rockefeller, or Garlic Cheese Grits. You can search for what you're craving through an alphabetical list. Or, use the InstaSearch, which lets you look for any ingredient, a key ingredient, the amount of preparation time, meal course, occasion, etc. You also can use a combination of these criteria, or you may want to look for recipes without ingredients to which you may be allergic. If you're not sure what you are hankering for, peruse the Photo Gallery.

What would you need a flour sifter for? Check out Kitchen Basics, with its narrated video tips for cooking tools, cookware/bake-ware, appliances, ingredients, and menu planning. How do you make a carrot curl, filet a fish, or properly fold a napkin? The Techniques section shows you the ins and outs of appetizers, sauces, vegetables, and more.

This program makes meal planning easier with 40 Preplanned Menus ranging from simple family meals to menus for special occasions. Recipe Themes lets you mix and match appetizers, main dishes, side dishes, and desserts for times like Warm Weather Entertaining, Romantic Dinners, or Traditional Southern Meals.

We wanted more than just recipes, and we found it. Mark recipes and create a meal plan, instantly resize a recipe for the number of

**Journey through
a surrealistic, eerie
world and solve the
mystery in *Myst*.**



people you are planning for, then add the ingredients to your shopping list. A Cook's Calculator is a button push away to help you figure measuring conversions or equivalents. If you ever get stuck, click the TipWizard lightbulb for narrated instructions.

Like other programs, this one has room for improvement. There are only 400 photos for 1,300 recipes. In addition, you can't add your own recipes or view nutrition information. However, because it's a LifeStyles product, it does have links to LifeStyles' *Micro Kitchen Companion* (available on CD-ROM for about \$50), to which you can add your recipes and calculate nutritional information.

The Southern Living Cookbook, Multimedia CD, \$35
Lifestyle Software Group
(800) 289-1157
(904) 825-0220



■ Mega Movie Guide 3.0

After you've answered the question "What's for dinner?" our next selection will help you handle your next big hurdle, "What'll we watch?"

InfoBusiness' *Mega Movie Guide 3.0* packs 42,000 movie listings on one CD-ROM. The reviews include recent movies such as "Crooklyn," "Schindler's List," "The Flintstones," or "The Cowboy Way," as well as reviews of movies dating back to the 1920s.

A colorful button interface keeps everything you need on-screen. If you aren't sure what you want to see tonight, search for a listing of movies according to actor(s), title, director,

year or decade it appeared in, the quality rating, an MPAA rating (G, PG, R), or movie category, such as Adventure, Horror, Science Fiction, or Western. Or, browse the Greatest Hits list of movies based on ticket sales and critic picks. If you're still unsure, check out one of about 40 video clips in the Video library.

When you've found one, read a synopsis of the movie, a summary of the plot, or one of nearly 1,000 in-depth movie reviews written by film critic Rex Reed. You can check if the movie has won an award, watch a video, see a photo, and check its rating, category, and length.

Special features include a Notes feature that lets you add your own messages. A ListBuilder feature lets you add movie selections to a list you can print and take with you to the video store. Expanded Ratings tell parents a little more about the content, such as if it might contain violence or profanity.

Want to learn more about movie history? Mega Movie Guide also contains a list of all the Academy Award winners and picture nominees from 1928 to 1993. Or, you can browse one of the biographies to get a career history of your favorite stars.

We picked the Mega Movie Guide, which sells for about \$40, because of the vast amount of movie listings and the lengthy, clear video clips. However, the one drawback of the program may be that it does not have as many detailed movie reviews as some competitors.

Mega Movie Guide 3.0, \$40
InfoBusiness
(801) 221-1100

There you have it, our top 10 choices on which to build your CD-ROM library. Although these programs may not be able to handle all your computing needs, they offer a start, and maybe a reason to build more shelves. ●

by Cindy Krushemsky

Overhauling For Multimedia: Is It Worth It?

Everyone must make this decision at some point: Should you overhaul your old, reliable car to try to eke a few thousand more miles out of it, or should you scrap it and buy a new car with all of the bells and whistles? It's never an easy decision. Your requirements for the car play a large part. If you only drive to the store once a week, your old car probably can survive with little or no work. If you drive 200 miles a day, though, a major overhaul or a new car probably are your only choices.

Once you've decided to make some sort of change, financial considerations become your first priority. You'll save some money initially by overhauling your existing car, but buying a new car might be more cost effective in the long run. And who can resist the sleek look and feel (and smell) of a new car?

If you haven't already, you'll eventually run into the same situation with your computer. Because of constant technological improvements, your new computer is old news virtually before you can connect it to an electrical outlet. That's why some people are reluctant to purchase a new computer; they'd rather upgrade the hardware to try to get the most out of their initial investment.

Your upgrade needs are more immediate if you want to run multimedia programs. (See the sidebar titled "Multimedia And MPC2" for more information.) Some of today's multimedia programs tax computers that were considered top of the line only a couple of years ago.

Just like with an old car, if you plan to upgrade an older computer to multimedia capabilities, you might find yourself spending far more than you had planned. A simple microprocessor upgrade may not be enough to improve your computer's performance significantly; the components found in older computers usually aren't strong enough to keep up with an upgraded microprocessor. In some cases, by the time you pay for all of the improvements you need, you could have saved enough money to be halfway or more toward paying for a new computer.

■ Deciding To Upgrade

When is it time to think about a hardware upgrade? Your software will tell you know.

"It's really driven by dissatisfaction with software performance," says Bob Bennett, marketing manager for Intel. "If your software is slow to respond, if it's not giving you the response time you're looking for, that's a really good sign that you ought to look at something to increase your overall performance."

Computer hardware upgrades are inevitable, unless you never change the type of software you use, because

new software programs are demanding improved hardware. If you've used a basic DOS word processor on your 286 machine for years, and you're happy with the results, you probably don't need to upgrade. But that's exactly the problem many people are discovering. Their old programs *aren't* cutting it anymore, or they want to run new multimedia programs, but their old computer can't handle the software demands.

If you've decided your old computer isn't sufficient in its present state, you have three upgrade options: buy a new computer, buy a used computer, or breathe new life into your present computer with new parts. The first option is easier, but the second and third options are less expensive initially. Whether the second and third options are cost effective over the long haul, though, is debatable.

We'll compare the cost of upgrading various computers to MPC2 capabilities and beyond with buying a new multimedia-ready computer. (See the sidebar titled "Comparison Shopping" for some cost comparisons.) We won't look at used computers, except to say that only a few used computers can deliver op-



timum multimedia capabilities because most of them are older models.

■ Microprocessor

Upgrading the microprocessor will give you the most noticeable performance improvement.

"A lot of these users who are adding multimedia to their existing systems find out... the most important place they should upgrade is the processor," says Darin Ferriola, product manager at Kingston. "A lot of the CD-ROMs are taxing the entire capabilities of their system. It's a pretty good option for users."

The microprocessor (also called the central processing unit [CPU]), is the "brain" of your computer; it handles all instructions from you and from the software. Companies make continual improvements to microprocessors so they can work faster and handle more instructions. Intel is the world's leading microprocessor manufacturer for IBM-compatible computers. Examples of Intel microprocessors (in the order of creation) are 8086, 8088, 80286, 80386, 80486, and Pentium. (Most people drop the "80" when discussing the chips.) You also may see microprocessor names like 386SX or

486DX. SX chips don't contain math coprocessors, while DX chips do. (A math coprocessor aids the microprocessor in carrying out complicated mathematical calculations, improving the microprocessor's performance.)

A microprocessor upgrade increases the clock speed with which the chip performs its internal calculations, but the chip continues to communicate with the other computer components at the same rate it did prior to the upgrade. This allows you to obtain quicker calculations without having to change every component. SX2 or DX2 chips double the clock speed inside the chips, while DX4 chips triple the clock speed. **Clock speed**, which is measured in megahertz (MHz), shows the number of clock cycles a chip can produce per second. It measures how quickly the microprocessor executes commands. For example, a 66 MHz 486DX2 chip would have its internal clock speed doubled and could execute up to 66million clock cycles per second. You'll want an upgrade chip with the maximum clock speed available, although some computer systems don't work with certain upgraded clock speeds.

If the chip contains **cache memory** (pronounced "cash"), you'll see even greater

Intel's OverDrive family of microprocessors works with 486 machines.



improvement. (Cache memory is a special area of high-speed RAM where the processor stores certain pieces of information for quick retrieval and improved performance. RAM, or **random-access memory**, is the temporary storage area used to store programs and data when they're in use.) Nearly every upgrade chip contains internal and/or external cache. You'll want as much cache memory as possible when buying an upgrade chip to help improve performance.

The overall system improvement you see with an upgraded microprocessor depends somewhat on the quality of your other components. That's why a clock-doubling chip sometimes yields only a 30% overall system improvement, rather than the 100% improvement you'd expect. Certain applications, such as a spreadsheet containing complicated calculations, will show greater improvements if you introduce a math coprocessor with the upgrade. Other applications will show little or no improvement. If you can, make certain your upgrade chip contains a math coprocessor.

"If you're doing standard business applications, you'll find a really good increase in performance," Ferriola says. "The good thing about some of our processor upgrades is we get that math coprocessor going for you, so that can help you out as well. It really depends on what you're doing."

Intel, Cyrix, Evergreen Technologies, and Kingston are major manufacturers of general microprocessor upgrades. Some computer manufacturers offer their own brand-specific upgrades. Before ordering any upgrade chip, contact the upgrade companies and your computer manufacturer to determine what chips

Multimedia & MPC2

When running multimedia programs, the more powerful your computer, the happier you'll be with the results. **Multimedia** is the combination of graphics, animation, text, video, and sound in a software program designed to enhance the interaction between the user and the software. Multimedia brings programs to life and gives them their own personality. A multimedia computer is one that has the hardware necessary to run such programs.

The Multimedia PC Marketing Council (MPC) sets the base standard for multimedia computers. The MPC Level 1, introduced in 1990, has been obsolete for quite a while. MPC Level 2 (MPC2), introduced in 1993, is the current standard (see chart).

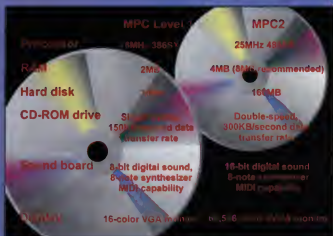
An MPC2 computer isn't exactly top of the line anymore, though. In fact, you'd have a hard time buying a new computer with exactly the MPC2 standard. Most have more power. If you're going to run a lot of video-intensive

multimedia programs, you'll need to exceed the MPC2 standard. A computer with a 486DX4 or Pentium microprocessor and at least 8MB of RAM (preferably 16MB) probably is entry level for you.

Macintosh

The MPC standards don't apply to Apple Computer's Macintosh and Power Macintosh computers. Macs all have

the capability to handle multimedia programs (some brands require the addition of a CD-ROM drive). As with IBM-compatible computers, the newer and more powerful the computer, the better it performs with multimedia programs. The 68040 microprocessor has been the Macintosh standard in recent years, but the



Power Macintosh, with its PowerPC microprocessor, will eventually phase out previous Mac models. Anything less than a 68040 microprocessor won't give you optimum multimedia performance. If you can afford it, Power Macintosh is probably the best multimedia route to take for Mac users. ●

An Evergreen REV TO 486 upgrade chip can improve a 386 computer to a clock-tripled 486.



are compatible with your computer. Some companies only make upgrade microprocessor chips for specific types of computers. Here are some generalities we found concerning upgrade chips.

8088 and 8086. It's not possible to upgrade these computers to multimedia capabilities. Their components are too far out of date.

286. Attempting to upgrade a 286 computer to multimedia capabilities usually is a mistake. You'll be better off buying a new machine because the components working with the microprocessor aren't fast enough to handle the demands of multimedia software. Kingston and Evergreen offer 286 to 486 upgrades that cost \$249 to \$299. While you'll see some system improvement with a 286 upgrade, you can't turn it into a blazing 486 multimedia computer.

386. Upgrading from a 386 is a cost-effective option, but your upgraded system performance probably won't equal that of the low-end 486 chips without at least some additional RAM. Some 386SX models aren't upgradable. Evergreen, Kingston, and Cyrix all offer 386 to 486 upgrades. Prices for clock-doubling capabilities (SX2 or DX2) are \$179 to \$299, while clock-tripling capabilities (DX4) are \$349 to \$599.

486. With any type of 486 microprocessor, you have numerous upgrade options that will give you average performance improvements of 30% to 70%. Some will be much higher, depending on the application. Bennett says Intel shoots for a 50% overall system performance improvement with its OverDrive chips. Intel just released a 63MHz Pentium OverDrive chip, giving a 486 computer Pentium chip technology for about \$450. All four companies offer chips that double and triple the speed of your

486 chip. Clock-doubling chips cost \$149 to \$299, while clock-tripling chips cost \$299-\$599.

Do you really need to upgrade a 486 chip to a faster clock speed? Bennett says the improved performance is worth the upgrade, especially in the multimedia arena.

"A lot of people went out and bought multimedia systems over the past two years," Bennett says. "A lot of them bought in at 486SX/20MHz or 25MHz performance, and they got the speakers, the sound card, and the CD-ROM drive. What they're finding now is their multimedia applications don't look quite as good as they did on the showroom floor when they were running on a Pentium or a 486DX2. We're actually getting a lot of questions and a lot of interest from multimedia purchasers about how they [can] make it run faster."

Other. You also can replace the entire motherboard, which upgrades the microprocessor and its components together. This is the most difficult installation procedure.

■ Multimedia Necessities

RAM. A simple RAM upgrade is a cost-effective enhancement to any system. The price of additional RAM fluctuates, but you'll probably find a 4MB SIMM (single in-line memory module) for \$180 to \$200. SIMMs are available in 72-pin and 30-pin configurations, but most newer computers will use 72-pin SIMMs. (Pins are slender prongs responsible for making the actual connections when a device is plugged in.)

Hard disk. You can buy internal and external hard disks. Although the internal version will cut your cost in half, it requires a complicated installation. You'll pay around \$500 for a 540MB external hard drive, while a similar internal version

will cost \$250 to \$300. A 1080MB internal hard drive will cost \$450 to \$550. (A hard disk is a computer's permanent storage device.)

Display. A high-quality monitor will be expensive. You can expect to pay \$250 to \$400 for a 14-inch monitor, \$350 to \$600 for a 15-inch monitor, and \$600 to \$1,000 for a 17-inch monitor. Most new computers don't include a monitor in their price, but they have a monitor "bundled" with the computer. Unless the computer and monitor are physically attached, though, you don't have to buy the monitor displayed with the computer, which usually is lower quality. For multimedia, you'll probably need a Super VGA monitor with a maximum .28 dot pitch. (Dot pitch, which affects image resolution, is a measure of pixel spacing given in millimeters.)

Video card. Video accelerator cards allow a computer to handle adequately the newer video-intensive multimedia programs. You'll want a minimum 1MB board that supports at least 65,000 (preferably 16.7 million) colors. Such boards cost \$100 to \$200.

CD-ROM drive. A CD-ROM (compact-disc, read-only memory) drive gives you the ability to read CD-ROM discs, the medium used by most multimedia programs. The speed with which the drive spins the CD-ROM disc and the time required to access data from the disc are determining factors in CD-ROM drive prices. Faster drives yield higher prices. A double-speed CD-ROM drive is the minimum for multimedia, and you don't want an access speed of more than 300 milliseconds. An internal CD-ROM drive will be cheaper than an external model, but it requires a complicated installation. For internal CD-ROM drives, you'll pay \$125 to \$175 for double-speed, \$275 to \$350 for triple-speed, and \$375 to \$450 for quad-speed. For external CD-ROM drives, you'll pay \$200 to \$300 for double-speed, \$375 to \$450 for triple-speed, and \$475 to \$575 for quad-speed.

Sound card. Sound cards, which provide audio capabilities to your computer, are available in 8-bit and 16-bit formats. For multimedia programs, we recommend a 16-bit card, which costs \$100 to \$150.

Speakers. Most new multimedia computers have built-in speakers, but these aren't always the highest quality, and you could end up buying external speakers. You'll find large price fluctuations here; anywhere from \$40 to \$200 and beyond. High-quality speakers carry a higher price tag. Test any speaker before you

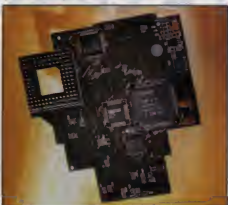
buy and compare speakers in different price ranges. Computers require magnetically shielded speakers to prevent interference from the PC, so general stereo speakers won't work. If you're looking to save money, don't buy the cheapest speakers you can find; invest in a set of quality headphones instead. You'll get far greater sound quality than with cheap speakers, and you'll only sacrifice the ability to have more than one person listen at a time.

Multimedia kits. If you're looking for the quickest and easiest method for obtaining multimedia components, a multimedia kit is probably the best choice. Remember, though, that the quality of the components in the kit sometimes won't be as high as those you can buy separately. The kits don't normally contain RAM or microprocessor upgrades, either. Most kits are in the \$250 to \$500 range and contain internal, double-speed CD-ROM drives, 16-bit sound cards, and external speakers. The more expensive kits generally contain better components (especially speakers). Many kits also contain a variety of CD-ROM software titles (usually 10 to 25), which may be their biggest asset. If you're looking to start a CD-ROM library, finding a kit with titles you were planning to buy anyway could save you money later.

Bottom Line

For optimum multimedia performance, your best bet is to buy a new computer. A 50MHz

Kingston's Lightning 486 chip contains 16KB of internal cache, which boosts processor performance.



only do all of the components measure up to multimedia requirements, you'll usually receive a number of multimedia titles to start your CD-ROM library.

"The best thing to do, if you can, is to buy a new system," Bennett says. "Not only do you get a faster processor, but you basically upgrade every facet of that system. You get state-of-the-art (components), which are difficult to get on a discreet basis in terms of upgrading each individual component of your system. The problem is a lot of people can't afford to go out and buy a new PC every year or two, and that's typically how fast the software spiral turns. Upgrading your CPU is an excellent way of increasing your overall system

performance, but doing it in a cost-effective and easy-to-install way."

If you decide to upgrade, you will find some quality products that can enhance your current computer, but you can't expect the same performance you'll get from a comparable new computer. An upgrade will extend the life of your computer, but you'll get more multimedia mileage out of a new model. ●

by Kyle Schurman

For More Information:

Cyrix Corp.
(800) 462-9749
(214) 994-8388

Evergreen Technologies
(800) 733-0934
(503) 757-0934

Intel Corp.
(800) 525-3019 (fax-back)
(800) 538-3373 (sales)
(800) 548-4725 (literature)

Kingston Technology Corp.
(800) 835-6575
(714) 435-2600

Comparison Shopping

We've compiled some cost estimates comparing typical configurations for new and used computers in the accompanying chart. The prices shown for the upgraded computers' components on the right are the estimated costs for giving them capabilities as equal to the new 50MHz 486DX2 computer as possible. A 50MHz 486DX2 computer, although it is more powerful than the MPC2 guideline, is an entry-level computer in today's market. Nearly all new computers on store shelves exceed the MPC2 guideline in power and performance.

All of the prices used in the chart are approximate street prices. We calculated the upgrade prices with the assumption that you

purchased separate upgrade components. You might save a little money with a multimedia kit.

With the new computers, you'll receive pre-installed software and a warranty. If you don't want to install the upgraded components yourself, you'll have to add labor costs to the upgrade prices.

These figures are only a guideline; your computer system needs probably won't meet these guidelines exactly. When weighing whether to upgrade, you need to decide what percentage of the cost of a new computer you are comfortable paying to give your current computer multimedia capabilities. If you were planning to buy a new computer within a year anyway, your cutoff point

BUY NEW OR	UPGRADE FROM	
	50MHz/486SX	33MHz/286
\$1,850	25MHz/486SX	16MB RAM
	16MB RAM	15-bit sound card
	15-inch SVGA monitor	
	50MHz/486DX2	
	420MB hard drive	
	8MB RAM	
	1MB video RAM	
	Double-speed CD-ROM	
	16-bit sound card	
	Built-in speakers	
	15-inch SVGA monitor	
(Note: Base system used for upgrade comparisons.)		

OTHER NEW OPTIONS

\$3,190	\$2,400
100MHz/Pentium	75MHz/Pentium
1600MB hard drive	540MB hard drive
16MB RAM	8MB RAM
1MB video RAM	1MB video RAM
Double-speed CD-ROM	Double-speed CD-ROM
16-bit sound card	16-bit sound card
Built-in speakers	Built-in speakers
15-inch SVGA monitor	15-inch SVGA monitor

will be fairly low, maybe below 30%. If you need multimedia capabilities but a new computer isn't in the budget, your cutoff point will be significantly higher, maybe 50% or more. ●

Choosing A CD-ROM Drive



During the past year and a half, the number of choices among CD-ROM drives has exploded. The shop that carried one or two drives in 1994 may easily carry a dozen or more today, and the differences between them can be dramatic. For CD-ROM novices, these differences can make purchasing a CD-ROM drive a confusing—and intimidating—process.

■ Speed

Speed is measured in several ways. The most important specification in a CD-ROM drive is the **data transfer rate**—how fast the CD-ROM drive can read data from a disc. The faster the transfer rate, the more natural motion will appear. The market standard is becoming 600 kilobytes (KB) per second, and is called **quad-speed**. It is four times faster than the original single-speed (150KB) drives. Other drives include the double-speed drive, which has a data transfer rate of 300KB per second, and the triple-speed drive with a rate of 450KB per second. The double-speed drive was the standard until late 1994. (A kilobyte is the equivalent of 1,024 bytes.)

The **access speed** is the time required for a drive to prepare itself to read data from the disc. This speed is less important than the data transfer rate. It may become a factor, however, when searching a legal database or a national telephone directory where access speed is a key factor in how fast the application runs, according to Plextron, a leading CD-ROM drive manufacturer. It is usually best to choose a fast transfer rate over a fast access speed.

Although many drives boast “multi-spin” or “dual-speed” technology as a “unique”

product feature, all drives have very similar technology. Because data is laid out in circles on the disc, all discs must spin faster when reading data near the center than when reading data near the outside edge. Because they must slow down to 150KB per second to read an audio passage and speed up to 300KB, 450KB, or 600KB per second to read data, they all have some version of dual-speed technology, regardless what competing manufacturers call it.

Another factor affecting speed is the **buffer**. A buffer reads ahead and stores data, allowing it to be accessed very quickly. Although a larger buffer may seem better than a smaller one, its performance depends upon the efficiency of the **firmware** (the instructions permanently embedded on a chip). The only way to evaluate a buffer is to read the product evaluations and tests published in consumer magazines or by reading the specification sheets available from a dealer.

■ Interface

CD-ROM drives have three interface options: IDE, proprietary, and SCSI (pronounced “scuzzy”). Both SCSI and IDE interfaces tend to have faster access times than proprietary boards, according to Tony Rodriguez, audio products manager at Orchid Technologies, a manufacturer of multimedia system audio cards.

The IDE, or **Integrated Device Electronics**, interface standard is used for the latest hard disk controllers, which come with the PC. It is not backward-compatible. With this type of interface, the controller electronics reside on the drive itself, eliminating the need for a separate

adapter card. If you are upgrading and want to add an IDE-based CD-ROM drive, you also must add an IDE interface card. (The current IDE standard is called “Enhanced IDE.”)

Proprietary interface boards offer a good price point and are produced by Sony, Panasonic, and Mitsumi, among others. However, they tie you to one company for support and upgrades. This is particularly disadvantageous because your range of options is severely limited when you are ready to upgrade your components.

The **SCSI**, or **Small Computer System Interface**, controls CD-ROM drives, hard disks, scanners, printers, and other peripherals. Because it has been used for several years, the bugs have been worked out and SCSI is now considered to be the most reliable type of interface. SCSI cards can handle up to seven peripheral devices and are designed so the devices can communicate directly with each other, without going through the **central processing unit** (the “brains” of your computer), thus saving time and reducing a computing bottleneck on busy systems. SCSI’s added intelligence is rarely used by home and small office computers because those systems typically have only one SCSI device on a port.

The primary advantages of a SCSI-based CD-ROM are that the open slots inside your PC are saved for other uses, and that installing upgrades from different manufacturers is a matter of swapping boards. In multitasking environments, and in environments that use both DOS and Macintosh computers, SCSI also is recommended. All Macintosh PCs come with a SCSI (but not an IDE) port to allow a SCSI-based CD-ROM drive to be added.

SCSI interface boards come in 8- and 16-bit versions. The difference between an 8-bit and a 16-bit board is the difference between a two-lane and a four-lane highway. (A bit is the smallest unit of information handled by a computer. A group of eight bits is called a byte.) Twice as much traffic can travel on a four-lane highway. If you buy a single- or double-speed CD-ROM and only plan to connect it and nothing else (not even a hard drive) to the SCSI board, an 8-bit board will suffice. This is because single- and double-speed CD-ROM drives can't pump data fast enough for users to gain anything by going to a 16-bit board. If you choose a triple- or quad-speed drive and are going to plug a hard drive into the SCSI board, use a 16-bit board for satisfactory performance.

■ Adding Sound

Sound isn't necessary for a CD-ROM, but it is nice. The most common stumbling block here is simple cable connections. There are no standards yet for the connections between CD-ROM drives and sound cards, so finding a cable that fits at both ends is tricky. Manufacturers say this is one of the best reasons to have your dealer, who is likely to have the right cables, install the drive and sound card.

For the best sound quality, choose a 16-bit sound card. You can hear the difference; 16-bit sound cards provide a more robust, stereo-like sound, whereas 8-bit sound cards are more like a mono channel sound. Be careful, though. The 16-bit designation refers only to the card's audio channel. For optimum performance, ensure that the card provides 16-bit SCSI.

■ Compatibility

Most CDs can be played in any CD-ROM drive, including the CDs you play on your stereo. The exception is multisession photo CDs, which can be read only by CD-ROM drives. If the drive is capable of reading multisession CDs, ensure that the interface board and software device driver support multisession photo CDs. To view these CDs, you must install special software (such as *Cord Photo CD Lab*, *Kodak Access Plus*, *ImCat Magic Lantern*, or *Adobe Photoshop*).

Some drives say they are "XA Ready." XA is an acronym for **eXtended Architecture**, a technology that extends the capability of standard discs, but is not yet used. Even with an XA Ready CD-ROM drive, you would have to add an XA decoder board, which is relatively rare, to play an XA title. If the CD-ROM drive you

choose has this capability, you will be ready if the technology catches on. Otherwise, it's not necessary.

■ Physical Features

The choice between an internal or external CD-ROM drive is personal. Plextor, Chion, and other leading manufacturers offer both, with no difference between the specifications of their internal and external models. The real questions are "Do you have the space on your desk?" and "Do you want to carry the drive to multiple computers?" Some PC manufacturers, including Compaq, offer multimedia PCs with everything you need pre-installed. If you are buying a new system, this is worth considering.

Drives come with either a caddy or tray-loading mechanism. This is the most vulnerable part of any CD-ROM drive. The tray mechanism is the easiest to use, operating like the tray on a stereo CD, but is subject to damage when open. The tray has been appearing increasingly on lower-end drives, but can offer years of excellent service with normal care.

A caddy operates like a floppy diskette drive. With automatic-loading drives, once a caddy (the disc in a plastic case) is inserted about halfway into the drive, the drive pulls it inside. Then a door on the bottom of the caddy pops open, the disc begins to spin, and a laser underneath the disc reads the information on the disc. The most common problem with a caddy is the jamming of the caddy into the drive, which is caused by users trying to insert the disc all the way inside, like they would a floppy disc. If you choose an automatic-loading caddy, it should have an emergency eject mechanism so a stuck disc can be retrieved without damaging the drive. Manual drives avoid the problem of jamming because users push the CD all the way into the drive, just like a floppy diskette. Manual drives are considered virtually impossible to break. (For more information about caring for your CDs and CD-ROM drive, see "Caring for your CDs" in this issue.)

Armed with the technical information you've learned here, as well as your answers to the questions in the sidebar "Purchasing Points To Ponder," you'll find that buying a CD-ROM drive isn't as intimidating as you once thought. ●

by Gail Dutton

Purchasing Points To Ponder



- If you're only going to use the CD-ROM drive to listen to audio CDs, you can easily keep your double-speed drive.

- If you're going to be creating or accessing animation or other moving video images, it would be best to use a higher-speed drive. While these tasks can be accomplished with a double-speed CD-ROM drive, higher speeds will make programs run smoother (i.e., no jerky movements).

- If you plan to keep the drive for the life of your system, you may want to invest in a higher-speed drive now. If you're looking for a stopgap and plan to upgrade quickly, consider a lower-speed drive. In the long run, however, a higher-speed drive is probably your best bet.

- If you have children, a majority of your software probably will include games and educational packages with video and animation. In this case, you'd be wise to buy a higher-speed drive.

- When buying a CD-ROM drive, you should be less concerned with brand name than with available technical support. Be sure the shop from which you buy the equipment provides technical service or can recommend a reputable service technician.

- Compare prices and warranties. An exceptionally inexpensive CD-ROM drive might be attractive initially, but if it's not backed by a warranty, you may want to proceed with caution.

- Drives can be bought through mail-order companies. You, or someone else, will need to install the new drive. Another point to consider is that you are on your own when buying from a catalog, and will need to know what you want before you order. ●



Installing Software

Quick And Painless

with the terminology. We'll give you some examples of installation procedures for a typical program written for each of the major PC operating systems. See "Tips For A Smooth Installation" for pre-installation preparations.

programmers to make installation programs easier. Most Windows programs handle nearly every aspect of the installation procedure, allowing you to customize the installation when necessary. (Windows is an operating environment designed to run on top of DOS.)

For our example, we'll take you through installation of *Microsoft Word for Windows*. After starting Windows, we selected the Run command from the Program Manager's File menu. We inserted installation diskette 1 in our A: drive. We then typed:

```
a:\setup
```

on the Command Line in the Run dialog box and clicked the OK button. (Most Windows programs use Setup.exe as their installation program file.) The installation program was fairly automatic. The program gave us the option of performing a "Typical Installation" or a "Minimum Installation," which would require less hard disk space. The program also gave us a choice of installing certain add-ons, such as clip art images. The installation program created a program group and icons for us and prompted us when to install new diskettes.

■ Macintosh

Apple Macintosh programs have always been easy to install because of simple-to-use installation programs that take care of everything for you. For our example, we'll use *Quicken 5* for Macintosh. (Macintosh computers can't run programs designed for IBM-compatibles, and vice versa, without special software.)

We inserted installation diskette 1 in our diskette drive and double-clicked on the diskette's icon. In the diskette's window, we double-clicked on the *Quicken 5* Installer icon. *Quicken's* installation program took care of everything else. All we had to do was choose

■ DOS

While DOS installation programs will cause the most headaches, especially for those new to computing, they've made tremendous ease-of-use improvements. (DOS, or disk operating system, is the operating system software used to run the majority of IBM-compatible computers.) We'll use *WordPerfect for DOS* as our example. We inserted installation diskette 1 in our A: drive, and at the DOS prompt we typed:

```
a:\install
```

and hit ENTER. (Most DOS programs use Install.exe as their installation program file.) The program let us choose whether we wanted a complete or custom installation. We also were given the option of installing printer drivers. We needed to know the type of printer we had in order to install the correct driver. The installation program then took control, prompting us when to install new diskettes and showing us a progress graph. We had a few chances to change the program's setup, but we were able to accept the default settings each time.

■ Windows

Because of its point-and-click graphical interface, the advent of Microsoft Windows forced

Ever notice how when the doctor tells you, "This shot won't hurt a bit," it *always* hurts; then it swells and you can't lift your arm for a week? Or how the dentist always waits until he has two fingers, a drill, and a mirror in your mouth before asking if you mind if he fills that additional cavity he just spotted. That's when you wonder why they can't be more truthful with you upfront.

In the early days of personal computing, software companies had their own painful problem they didn't like to discuss—difficult installation procedures. Five years ago, with some programs, you had to identify correctly every basic hardware component in your computer system to get your software to work properly. It was technical torture, similar to pulling teeth with no painkiller . . . and rusty pliers.

Installation programs have become increasingly automated, though. Thick installation manuals used in the past have been replaced in many of today's programs by a brief listing of installation instructions on a diskette label.

Today's software programs can virtually install themselves. The majority of programs can identify your system configuration and create a directory in which to install their program files. You'll still find tough-to-install programs lurking on store shelves, but they're few and far between.

Despite the improvements, software installation for the novice computer user still can be a little confusing, especially if you're not familiar

the folder (same as a directory in IBM PC terminology) where we wanted to store the Quicken program files and swap diskettes when prompted. You will never have to identify a hardware component with a Mac program.

■ CD-ROM

While CD-ROM programs used to be difficult to install, they're now as easy as any diskette program, although some CD-ROM software packages aren't clear about whether you should install from DOS or Windows. (CD-ROM, or compact-disc, read-only memory, is a form of data storage that uses laser optics rather than magnetic means.)

The biggest problem you'll have with installing CD-ROM programs is if your computer doesn't have the system configuration needed to run the software. For instance, you might experience problems with a shortage of available RAM for some CD-ROM programs.

We'll use the Windows CD-ROM program *Microsoft Bookshelf* for our installation example. After starting Windows, we clicked on the File menu in Program Manager and then on the Run command. After inserting the Microsoft Bookshelf disc in the CD-ROM drive, we typed:

```
d:\setup
```

on the Command Line in the Run dialog box and clicked on the OK button. Most CD-ROM drives are labeled as the D: drive, although some are called the E: drive. CD-ROM software uses both Setup.exe and Install.exe as installation program files.

The installation for Microsoft Bookshelf basically was automatic from there. The installation program paused several times, giving us chances to make changes to the program's setup, but we didn't need to change the defaults. The installation program listed the components our computer system was missing that would prevent full use of the program's features, such as a sound card.

The actual installation took just a few seconds because CD-ROM programs install only the files they need to operate. The majority of files remain on the disc.

A DOS CD-ROM program will use a similar installation pattern to the DOS program described earlier. You're more likely to experience problems with available RAM, though, when installing a DOS CD-ROM program. ●



The installation program for the *Microsoft Bookshelf Windows CD-ROM* program is virtually automatic.

WordPerfect for DOS contains a fairly easy-to-use installation program, despite its text-based interface.



Tips For A Smooth Installation

Backup. Always make backup copies of your Autoexec.bat, Config.sys, and *.INI files before installing a new program. Some programs will automatically edit those system files without your knowledge. If such editing causes your system to crash, you can at least return to the setup you had before installing the program.

Backup, again. Always make backup copies of your program diskettes before you begin installation. (Your software license agreement allows you to make one copy of the program for backup purposes.) Then use the backup copy for installations. You'll have the original diskettes in reserve if your backups become damaged or lost. Creating a backup copy of a CD-ROM isn't feasible for most people, but you should have backups for all other programs. Investing a few dollars in diskettes and having a backup routine will be more than worth the hassle if an installation diskette for a \$495 word processing program disappears. Sorry, but your warranty doesn't cover a diskette you lost or your dog used for a chew toy.

Close programs. Close all other programs before beginning an installation. Some programs cannot install properly with other files open, or they could damage open program files.

Help. Most programs have built-in, online help features. If you're looking for additional advice about installation, reading files with .HLP extensions or with names similar to Readme.doc sometimes provide valuable

information. Such files often contain information that doesn't appear in the user guide. Use DOS' TYPE command or Windows' Notepad to view the files.

Registration. Filling out the card isn't the first thing you want to do when you open the software package. It's important, though, because some companies won't allow you to obtain technical support until they receive your card. Some companies have limited money-back guarantees or limited time for free technical support, and the clock starts ticking when the clerk hands you a receipt. If you're exceptionally tardy in returning your registration card, you could lose out on these benefits.

System components. You don't need to know all of these as you did in the past, but some programs will ask your brand of sound card or location of a modem. Make certain you have enough hard drive space.

Technical support. You probably won't need it, but it's a good idea to have the phone number handy anyway. You should make certain you have a phone you can use while you're sitting at the computer, too.

User guide. Yes, it's boring reading. But you should at least glance through it before beginning installation, because you can get an idea for any odd program quirks. Reading the sections dealing with installation and troubleshooting probably will be most helpful. ●

How Do They Rate?

There's one entertainment rating system familiar to all Americans. It's usually brought to our attention by voices at the end of movie ads on television. A chipper voice happily announces, "Rated G," or a somber voice intones, "Rated R."

While we may be accustomed to Motion Picture Association of America (MPAA) ratings, there are obviously flaws in the system. The MPAA rating process is often mysterious, with no definite reasons enumerated for why a film received a particular rating. Also, an MPAA R rating, for example, may indicate large amounts of violence, rough language, sexual content, or some combination of these. Potential viewers may abhor the likes of Sharon Stone crossing her legs but have no qualms with Sly Stallone waxing dozens of bad guys. How can they tell by ratings alone if an R-rated film is for them?

When computer and video game manufacturers created self-regulated rating systems last year, they considered the movie industry's shortcomings. The corrections made to that system, along with other shrewd steps, helped create a pair of voluntary game ratings systems that have won praise from game companies and consumers alike for their objectivity and enlightening ratings.

Uncle Sam's looming intervention provided the impetus for the game industry to get organized and form ratings systems. As violent games such as Acclaim's *Mortal Kombat* grew increasingly popular last year, Congress pressured manufacturers to rate their own products. If they failed to do so, the government would tackle the job. Companies and trade groups scrambled to get organized and keep bureaucrats out of the picture. By fall of 1994, two ratings systems were in place.

■ RSAC

The Recreational Software Advisory Council (RSAC) is an independent, non-profit association that uses a governing board, advisory committee, and several ratings review panels. Most RSAC officials come from outside the



software industry. They include a communications professor, a pediatrics professor, a psychologist, an educator, and soon a law enforcement officer. The Washington, D.C.-based RSAC is separate from any industry trade association, though the Software Publishers Association and other industry groups are represented on the board.

Stephen Balkam, RSAC's executive director, compares the organization's labeling system to that of the Food and Drug Administration, which lists the amounts of various ingredients on food labels. The RSAC label uses thermometer graphics to show the level of content in three categories: violence, language, and nudity/sex. Games receive a rating from one to four in each category, with separate thermometers indicating each rating. Brief text such as "Moderate expletives" describes specific game contents. Games with no potentially objectionable content receive an ALL rating.

Companies wishing to have a game rated pay a \$350 fee if their gross annual revenues exceed \$1 million or \$25 if revenues are less than \$1 million. The sliding fee ensures that even small companies, common in the computer gaming industry, can afford to seek ratings. The company receives an RSAC questionnaire in either paper or software form. A tentative rating results from how the questions are answered. Opening questions determine whether the game may contain objectionable content in any of the three major areas. A "no" response creates a tentative ALL rating for that category while "yes" responses lead to increasingly specific questions on game content.

The nudity/sex questions, for example, open with "Does this title portray revealing attire and/or nudity?" A "Yes" response leads to Question 3: "Does this title portray frontal nudity that qualifies as a provocative display of nudity?" All terms on the questionnaire, such as "frontal nudity," are defined in the RSAC packet.

When the questionnaire is submitted, the RSAC staff, which deals mainly with computer games, reviews

the answers for any obvious inconsistencies such as answering "yes" to "lovmaking" and "no" to "nudity." A final rating is then assigned. Manufacturers have been generally satisfied with their ratings, Balkam says. About 48% of the 45 titles rated thus far received ALL ratings. Balkam says only two games have achieved a four rating in any category, one each in violence and nudity/sex, and the highest language rating thus far was a two.

Balkam emphasizes that the RSAC rating methodology is open. Any consumer may request a copy of the questionnaire.

"It's not the movie industry where it's 12 people sitting in a room in L.A. and they come up with a PG-13 and you have no idea how they got there," he says.

The content-based ratings, Balkam says, represent a fairly revolutionary system because they don't suggest age ranges for which products are appropriate. Balkam cites a recent poll

conducted for RSAC that showed that 55% of the respondents supported content-specific ratings while 37% wanted age group recommendations. The RSAC system has won praise because it doesn't presume that all 12-year-olds, for example, are mature enough for certain game elements.

■ ESRB

The Entertainment Software Ratings Board (ESRB) system often deals with cartridge-based video games. Executive Director Dr. Arthur Pober says more than 300 games have received the ESRB's age-based ratings since the board began work in September. Five ratings are available under the system. Early Childhood (EC) games are suitable for children ages three and older; Kids to Adult (K-A) for six and older; Teen (T) for 13 and older; Mature (M) for 17 and older; and Adults Only (AO) for 18 and older. Game packages carry a label with one of the rating abbreviations and the suggested age group. Content Descriptors also may appear on the back of the package and carry phrases such as "Animated Blood and Gore" or "Use of Tobacco and Alcohol."

The New York-based ESRB charges from \$100 to \$500, depending on manufacturer revenues, for rating a game. Pober explains that a group of three demographically diverse raters, drawn from a pool of nearly 100, evaluate and rate each game. The raters, who come from a variety of socioeconomic groups, go through training sessions in which they look at dozens of games in order to learn objective rating skills.

"We are not in the business of banning or censorship," Pober says. "They (the raters) may find something they find personally distasteful, but their job is not to make those value judgments. They have to be able to look at something and say 'That's a decapitation. That would be considered animated blood and gore and would be labeled accordingly.'"

Each rater independently rates games by viewing video tapes, looking at responses to questionnaires, and playing early versions of the game. The raters don't know or discuss what games other raters are working on. The individual results are entered on a computer and combined for a preliminary rating. The final version of the game arrives at the ESRB about 15 days before shipping and staff members make sure it is consistent with the early versions they reviewed.

Pober says 340 titles have received ESRB ratings and no manufacturer has appealed its

rating. Ninety percent or more of industry officials, according to Pober, say they would have given games the same rating as the ESRB. Rating categories are defined clearly enough that companies know which game elements will produce which ratings.

"The ratings have been perceived to be accurate and fair," he says. "There are no surprises."

■ Content Control

Some critics have said companies may add more violent or sexual elements simply to gain a higher rating and appeal to young, male consumers who thrive on forbidden material. Balkam has, however, noticed a trend in the opposite direction. If anything, he said,

**"We are not
in the business
of banning
or censorship,"
Pober says.**

companies seek lower ratings. One manufacturer even removed an offending word to receive a lower language rating.

So far, the ratings haven't seemed to restrict manufacturers' creative impulses, Pober says. Executives from two companies famous for their violent games agreed.

Jay Wilbur, "Biz Guy" at id Software, says he doesn't care what rating his company's games, such as the infamous *Doom* and *Doom II*, receive. Wilbur says his company is "100% behind rating games" and giving consumers detailed information for purchase decisions. But id doesn't think about rating categories when creating games.

"We develop the games we want to develop," Wilbur says. "First and foremost is creating the best game in the world, let the ratings fall where they may."

Furthermore, Wilbur says, he doesn't worry about complaints that the *Doom* games are too

gory. He says consumers who don't like the *Doom* games don't have to play them, and accusations linking real-life violence with games are unfounded.

"To blame the violent acts of individuals on the violent content of entertainment is ludicrous," Wilbur says. "It's a scapegoat. If we need an example, go to Japan. We bow in reverence to their mastery of violence in entertainment. We are rank amateurs in comparison. Look at their crime: none."

Allene Mills, director of public relations at Acclaim, says the ESRB system has fairly assessed Acclaim's games so far. While Acclaim supports game ratings, Mills says the company doesn't tailor products to fit categories. Instead, Acclaim picks a target audience for a game and adds elements appropriate for that age group. Mills says Acclaim never intended games such as *Mortal Kombat* for all players.

"We believe that not every form of entertainment is for every age consumer," she says. "One 15-year-old may be very young emotionally and another 15-year-old may be very mature. Those are individual decisions."

While manufacturers don't seem worried about what ratings their games receive, consumers are growing increasingly attentive to the labels on boxes. Pober of the ESRB says more consumers are considering ratings in purchase decisions as the labels become common on store shelves. Mills says ratings are now part of a game's overall marketing package. Balkam of the RSAC says a continuing, large-scale, educational effort is needed to let consumers know how ratings can help them pick appropriate games.

Both rating systems should become more visible in stores as manufacturers submit more titles for ratings and retailers refuse to carry unrated games. Pober says manufacturers realize that ratings provide a strong service for consumers and a good marketing image. Balkam says ratings took off slowly because Congressional pressure lessened after the systems were established and retailers carried all games, rated or not.

"Wal-Mart said they wouldn't carry games unless they were rated before Christmas of 1994," he says. "Then they carried games that weren't rated. The software publishers got the message that it didn't really matter. Wal-Mart came back and said yes, they will insist on it for March (of 1995). I believe that other companies will start doing the same."

In real life, of course, no far-off raters can perfectly ensure that the appropriate material

The Boom Of Doom

Dante himself would probably quake in the bowels of this inferno. The ceilings are low, the lighting poor, and the music ominous. And, by the way, the unspeakably foul-tempered inhabitants would love nothing more than to see you splattered all over the stone walls. Thank goodness for the BFG 9000.

Welcome to the halls of id Software's *Doom II: Hell on Earth* where if it moves, you kill it. It's the king of the action games and is hotter than a smoking chain gun—both in nature of play and the emotions it stirs among consumers. This first-person perspective, shoot-'em-up extraordinaire has become the consuming passion of millions of players and the point of some controversy over its content.

In case you're one of the sequestered O.J. jurors who've missed all semblance of news, here's the lowdown on the game: *Doom II*'s premise is as simple as the cerebral functions of a commando zombie, one of the *Doom* player's myriad of enemies. You're the baddest soldier in the solar system, returning to Earth after a gory battle to rid a Mars colony of aliens. Unfortunately, you find upon landing that Hellish hordes have overrun the home planet and eliminated most of the population. The world is swarming with imps, lost souls, hell knights, and arch-viles. Pistol in hand, you leap back into the fray.

The game itself is a fairly simple killfest. Players worry only about keyboard controls for movement, opening doors, and shooting. Your arsenal grows as you pick up chainsaws, shotguns, plasma guns, and the potent BFG 9000. The ever-ample supply of splattering blood and demonic critters has placed *Doom* squarely in the middle of the controversy over violent



Shotgun in hand, *Doom II* players set out to save the world.

games. There are a few brainteasers along the way as you must find your way through the maze and discover secret doors. The game environment is quite absorbing. The excellent 3-D scenery scrolls perfectly and is coupled with unsettling screams, roars, and weapons sounds.

The original *Doom* was released as shareware on many electronic bulletin boards in December 1993. Players could download the game free of charge. If they liked it, they sent id Software \$40 and received two more levels and a play manual. Jay Wilbur, id's "Biz Guy," estimates that there are currently 15 million *Doom* players. *Doom II* appeared last October at stores and has sold about 750,000 copies. The *Doom* series spawned a cult-like subculture of tournaments, online newsgroups, and fans dedicated to sharing *Doom* tips and secrets. Several large companies have banned the network version of *Doom* because too many employees were trading spreadsheets for rocket launchers.

"You don't play the game," Wilbur says. "You become the game. You'll see that in a lot of

ways. There are a few brainteasers along the way as you must find your way through the maze and discover secret doors. The game environment is quite absorbing. The excellent 3-D scenery scrolls perfectly and is coupled with unsettling screams, roars, and weapons sounds."

Doom wanna-bes have swarmed after id's lead like moths to the light of a shotgun. Some imitators are strong, some not; but all share the maze-roaming, gun-barrel-showing perspective of *Doom*. Wilbur says the *Doom* clones haven't affected sales of the original "one little bit."

Doom's influence soon will spread beyond the confines of computer gaming. Wilbur says *Doom* versions are available for the latest Sega, Atan, and Nintendo game systems. A movie deal is in the works with Universal Studios and director Ivan Reitman. Rumor, or maybe just wishful thinking, has it that Arnold Schwarzenegger could play the buzz cut hero. Simon and Schuster will publish four *Doom* novels, and a comic book deal is underway. Even merchandising and licensing deals are complete.

The whole world may be doomed. And it will surely be fun. ●

is served up to each child. Ratings and content descriptors can't describe the entire contents of every program. Manufacturers and raters alike insist that parents must play an active role in evaluating whether games are suitable for their own children.

Acclaim's Mills says parents can find detailed information in gaming magazines that review popular games. Pober, a veteran of 20 years in education and self-regulation in children's advertising, says parents should play games with their kids. He suggests visiting stores to read packages and look at ratings. A box featuring a screaming

man with a gun to his head obviously doesn't contain the carefree adventures of a fuzzy rabbit. And, Pober says, talk to salespeople. They're usually well-informed and can give a good sense of what most games contain.

When shopping, it may be helpful to differentiate between games that depict realistic action and those with cartoon-like images. Shootings in *Doom*, for example, produce spouts of blood, but the violence is animated and hard to confuse with real life. Many CD-ROM games, however, use digitized actors in sexual scenes that leave little to fantasy.

Pober emphasizes that parental responsibility for game choices is similar to that for television viewing and other entertainment. It is the real barrier between kids and what they see.

"You're spending a lot of money, and that money should not be solely in the hands of a kid eight, nine years old without checking what they're purchasing," he says. "The only thing we can do is offer the information so that they (parents) can make the judgment of what they think is appropriate in their own homes." ●

by Trevor Meers



Finally, a computer store for the way you live.

At CompUSA, we know that you lead a busy life. So when it comes to buying computer products, you want a store that makes things less complicated.



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Interactive Encyclopedias



Revving Up Reference Works

Imagine you've just finished reading an article about rocket technology and then with a click of a button, you watch one blast off. Or maybe you are researching your favorite movie maker, Walt Disney, and along with reading his biography, you can view how he screened together his animated movies.

Thanks to multimedia and CD-ROM, we have access to this kind of learning via our computers; especially the interactive encyclopedia, the mother of all CD-ROM reference programs.

Far from being merely articles with a few sounds and videos thrown in, most of the encyclopedias today have grown into extremely graphical and entertaining programs that bring topics to life. This year's round-up of encyclopedias also brings new faces and interfaces to the market. Join us as we break the binding, so to speak, of the titles you will find on the software shelves for '95.

■ Webster's Interactive Encyclopedia

One of the new faces introduced to the encyclopedia market this year was *Webster's Interactive Encyclopedia* from Cambrix Publishing. If you're thinking "with a name like Webster's, it has to be good," maybe you should save your money.

The program doesn't suffer from poor content or lack of features. However, when you compare it to the other titles that have been fine-tuned for several years, it falls by the wayside.

The main screen of the encyclopedia is centered on a desktop covered with eight items that you can click on to reach the program's main features. For instance, click on the Hourglass to jump to a Timeline or a Globe to go to the Atlas. A Desklamp brings you back to this main screen.

There are a number of search methods available. You can click the Rolodex to reach an

alphabetical index of all the articles in the encyclopedia. If you click an Open Book on the desktop to browse the encyclopedia at random, Webster's will pick articles and pictures and scatter them across the desktop as index cards. This is kind of neat if you want to learn at random, but the cards don't stay up long enough for you to read through all the information before another one pops up.

A Magnifying Glass lets you search for a particular word or phrase using Boolean logic, meaning you can look for this AND that, this NOT that, and this OR that. And finally, you can search the Topics feature, which lists about 100 category buttons containing related articles from the encyclopedia.

Webster's Timeline and Atlas are both linked to the articles within the encyclopedia. That means you can jump to a related article when you click on a picture or location name within either program. The Timeline is filled with pictures and a year finder that lets you

automatically jump to a specific year (instead of scrolling through the whole line). It also includes a special feature called "On This Day" that lets you pick a day and see key historical events in different years. This can be fairly interesting, but most of the events are births and deaths. We were not very impressed with the Atlas. It starts with a large map on which you can zoom in and out. The Atlas shows very little detail and many of the lines separating the states were fading or missing. For example, Nebraska and Kansas seem to be one big state on this map.

A Quiz (via the red Question Mark) tests your knowledge according to several difficulty levels, teaching you facts as you play. All the questions are based on material in the encyclopedia, and if you should ever get stuck, there's a button that lets you cheat.

The encyclopedia has 30 minutes of video, 180 sound clips, and 3,500 images, maps, and diagrams. Special multimedia indices let you search for these items, as well as biographies, book titles, music titles, names, and poems. This is handy if you get lost or want to jump right into the multimedia.

Webster's has all the encyclopedia basics, such as links to related articles and article trails that let you backtrack to previous screens. We liked the voice guide, which helps explain on-screen elements in almost every area of the encyclopedia. The articles were extremely short and to the point, and many were just a quick sentence or two that you might find in an ordinary dictionary. Other topics occasionally warrant a paragraph or two. We found the reading level to be from the late elementary level to adult.

All in all, the encyclopedia doesn't have the colorful interface found in other programs, or the in-depth information you are purchasing your encyclopedia to get. With a suggested retail price of \$39, Webster's is simply a cheaper alternative to better, more popular titles.

Webster's Interactive Encyclopedia, \$39

Cambridge Publishing

(800) 992-8781

(818) 992-8484

■ Microsoft Encarta '95

Is Microsoft Corp.'s *Microsoft Encarta* the best? Well if it's not, it's pretty darn close. The



The Pinpointer in the Microsoft Encarta '95 puts all of your search options in one window.

Microsoft Encarta '95 got a facelift this year with a whole new look, and a bunch of new features.

Instead of littering the screen with buttons to other areas and features, these aspects are hidden in drop-down menus in the new interface. As you move your mouse over the first word in a menu, the rest of the menu automatically drops down. The article screens also have been simplified. Articles appear in a column on the right, photos and videos appear in the middle, and you can open an outline on the left.

The majority of your searching is combined in a Pinpointer feature, which is accessed by clicking on a generic Find button. Here you can search alphabetically through 26,000 articles or click the Word button in the Pinpointer window to search for a particular word or phrase that might appear within the articles. Microsoft uses Boolean logic with ANDs, ORs, and NOTs, but also lets you specify how NEAR search words can appear next to each other.

Other buttons within the Pinpointer include the Category button that lets you locate an area of interest, like Physical Science and Technology, History, or Performing Arts, then choose a Category in that area to find an article. Click the Media button to search for the 7,000 photos and illustrations, 100 animations and video clips, and eight hours of sound clips, as well as the charts and tables or InterActivities (which we'll discuss later). Click the Timeline button if you're looking for information about an event in a specific time period, and type in dates between which the event might have

occurred. Click the Place button to determine a region, country, political subdivision, or city. If all this button pushing has you frazzled, click the Wizard. It guides you through questions to help you find what you are looking for.

Sometimes you don't want to use the encyclopedia to research—you just want to be entertained. The Encarta has a Browse feature for just such an occasion that will pick topics and articles for you.

We were impressed by the Interactivities, which are new to the '95 Encarta. About six interactive activities are scattered throughout the Encarta that reinforce the understanding of particular topics, such as fractals or world music and languages. For example, you can experiment with the orbit of the moon in one InterActivity, seeing how different starting positions, velocity, and orbits can cause it to fly off into space or crash into the earth. Another Interactivity lets you figure your own personal nutrition goals and whether you are meeting them by analyzing your diet.

The Encarta's Atlas and Timeline let you jump to articles within the encyclopedia when you click an icon or location on the globe. The Timeline is filled with pictures and graphics. You can zoom in and out of the Atlas and see countries, cities, lakes, and rivers. If you click a country name, you may jump to an article with a Fact Box (another new feature) that contain information on the capital, a picture of the flag, audio clips of national anthems, along with land and climate information, population numbers, economic statistics, and other data on government, education, and history.

You also can quiz yourself with the MindMaze game. You choose areas of interest and one of four levels of difficulty and make your way through a castle maze, answering questions to break an evil curse. If you get stuck, you can reference Encarta articles from the castle, and learn even more by clicking on items within castle rooms.

The Encarta is great for report writing. Colored text links you to related articles, and further reading materials are listed for your convenience. You can use the Pinpointer to create and save lists of articles or items you need for a report; a Notemark feature lets you flag an article and make notes to yourself about an article, just as you would with a



Post-it Note. The Encarta also has instant links to a word processor (the Windows Write program) and a dictionary and thesaurus to help you with your writing.

For a street price of about \$100, the Encarta is interwoven with lots of multimedia features and has powerful searching capabilities. However, some people may not like the new interface because you sometimes have to search for a feature or option. But all those magical drop-down menus keep the screen uncluttered so you have more room to work. Sure, the Encarta doesn't have all the detailed facts and as many articles as you may find in Grolier's. Nevertheless, the writing within the articles may be a little more understandable to an elementary student than Grolier, and it also might appear more entertaining.

Microsoft Encarta '95, \$100
Microsoft Corp.
(800) 426-9400
(206) 882-8080

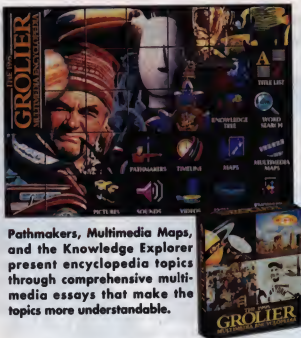
■ 1995 Grolier Multimedia Encyclopedia

Grolier Electronic Publishing Inc.'s 1995 *Grolier Multimedia Encyclopedia* gives the rest a run for their money. Maybe not because of an attractive interface and fun features, but because the content (based on the full-text of the Academic American Encyclopedia) is simply second to none.

As far as the interface goes, if you can handle windows and button bars, you can handle the Grolier encyclopedia. The main screen has 12 buttons that take you to the main features, or you can use a Toolbar for direct access to the most popular features.

You can search through an alphabetical title list of all the articles, or you can search for a particular word or phrase within the articles. Not only can you search with ANDs, ORs, and NOTs, but also how close the word has to be to another word, as well as if it is just in the article title, text, or caption, etc. This is as specific as it gets! You also have the ability to search by category and subcategory through a feature called the Knowledge Tree, which is really a series of windows.

If you're looking for a real multimedia way to learn, Grolier has got it. The Knowledge Explorer, Multimedia Maps, and PathMakers are three newer features that teach you the



Pathmakers, Multimedia Maps, and the Knowledge Explorer present encyclopedia topics through comprehensive multimedia essays that make the topics more understandable.

way you would expect an interactive encyclopedia to. Instead of reading individual articles and then looking at pictures and videos, these features use multimedia essays with text, pictures, and narration to more fully illustrate a topic or theme.

Almost 20 Knowledge Explorer essays show you how things work. For example, you could see how continental plates shift and create mountains, or you could see the common themes used in art during the Renaissance Art period. About the same number of Multimedia Maps illustrate events in an animated time-frame. You can watch the progression of the American Revolution from the first shots in Lexington to the Treaty of Paris, or you can discover the migration of prehistoric humans and learn how they populated the earth. Each essay includes more than maps—you also get facts and background about the eras. There are also links to related articles within the rest of the encyclopedia.

Pathmakers show you themes and pathmaking people that have made their mark in six different fields. Each of the sections is represented by a modern-day pathmaker. For example, you can learn about Innovators and Inventors with Paul B. MacCready, as well as watch his opinions on inventing in several videos. You also can read about other innovators, like Walt Disney; in this section you'll learn about his accomplishments, view animation illustrating how motion picture animation works, and see his photo. Along the way you can jump to related articles. Other pathmaker

sections include: the Novel and the American Experience with Kurt Vonnegut, Jr.; Explorers and the Horizons of Discovery with Buzz Aldrin; or Great Sports Achievements of History with Jackie Joyner-Kersey.

Grolier contains a Timeline and Maps, which are similar to the atlases found in other programs. Both have links to articles within the encyclopedia, but you can't instantly jump to a particular city. The maps in Grolier, however, seem to be the most detailed and include more cities and towns than the other encyclopedias.

Grolier rounds out its program with individual buttons for Pictures, Sounds, Videos, and Animations. Each is an alphabetic listing of the 8,000 images and six hours of multimedia within the program. The only drawback is that you can't search for one particular feature and jump right to it.

We found this year's encyclopedia to be the best yet from Grolier, with a street price of about \$100. While it may not be the prettiest program to look at, it certainly packed a more powerful punch. Aimed at a teen-to-adult audience, it had the most detailed articles and some of the best searching capabilities. Also, it seems to take a different approach toward presentation. If you like to see how history, science, or the arts have come together, the Knowledge Explorer essays, Multimedia Maps, and the Pathmakers pieces are great.

Many users will like the basic Windows interface. That means, however, that it may not be as graphical or as fun to use as one of the kid's encyclopedias, the Encarta, or Compton's.

1995 Grolier Multimedia Encyclopedia, \$100
Grolier Electronic Publishing Inc.
(800) 285-4534
(203) 797-3530

■ Compton's Interactive Encyclopedia

Compton's Interactive Encyclopedia, by Compton's NewMedia, is an entertaining encyclopedia with a new interface for '95 that can be enjoyed by younger users and adults.

Based on the 26-volume Compton's encyclopedias, Compton's divides its article screens into three "viewers," one for the article, one for multimedia aspects, and another for the path

that shows how you are maneuvering through the encyclopedia.

There are many paths (located in a Pathbar along the side of the screen) to search through the articles. You can search through an alphabetical list of all the contents (including all the multimedia features), or through a Topic Tree of categories and sub-categories. Another search method, the Idea Search, is a novel idea. It lets you type in a word, phrase, or question and then uses the keywords to retrieve articles that might help. But we found the Idea Search to be a somewhat overrated version of a word search feature. When we asked it if the moon was made of cheese, we got 70 articles on the moon, storytelling, tides, the dairy industry, goats, and so on. We could have just as easily searched for an article about the moon to learn that it is a big, orbiting rock.

If you are looking for an innovative way to explore the encyclopedia, the InfoPilot feature is really helpful. You start with an article in the middle of the screen, surrounded by four related articles, and then four articles related to those articles. It's like a network of articles that offers a unique way to learn how things are related. For instance, you might start with an article about dolphins, see a related article about sonar, then submarines, then the Merrimac, then on to the Civil War. Who would have thought dolphins would have anything to do with the Civil War?

This encyclopedia has an Atlas and Timeline that have links to articles within the rest of the encyclopedia, but they aren't quite as detailed as Grolier's. You can search for a particular place and time, though. We did like Compton's individual Timelines for the world and for the U.S., which means more detail on-screen and less clutter.

Compton's has lots of extras—such as a Notebook that lets you jot down notes, a tie-in to your favorite word processor, and a built-in dictionary—are found in other programs. Some are unique to the program. For example, Compton's Editing Room lets users put together shows by combining articles and multimedia items found in the encyclopedia. The Events Highlights feature narrates recent history-making events and people in multimedia essays.

Kids and adults also have the option of replacing the regular interface with graphical rooms through an Explore feature. They can operate the encyclopedia from a newsroom, a



Random House Kid's Encyclopedia has an interface tailored for the younger user.



playroom, a spaceship, and an attic. It's the same encyclopedia, but different objects in the room take you to the Editing Room or the InfoPilot. Last but not least, Compton's has lots of on-screen, narrated help, via video segments of Patrick Stewart (Captain Picard in "Star Trek: The Next Generation").

Overall, if you've got elementary-aged children and are looking for an encyclopedia that will keep them busy now and as they grow, you won't be disappointed with Compton's Interactive Encyclopedia. The articles are fact-filled and easy to read while the Explore interfaces, Editing Room, and InfoPilot will encourage them to use the program. And it doesn't cost any more than the other programs; its street price ranges from \$80 to \$90.

Compton's Interactive Encyclopedia, \$80-\$90

Compton's NewMedia

(800) 284-2045

(619) 929-2500

■ Random House Kid's Encyclopedia

The first word that comes to mind when you look at Knowledge Adventure's new *Random House Kid's Encyclopedia* is "wow." The program creates a very colorful and most graphical, kid-oriented interface that will knock your socks off.

The encyclopedia starts on Main Street, a three-dimensional tile street that you must travel on to get to the three buildings you want to visit: the Factory (containing the encyclopedia articles), the Movie Theater (a slide show of all the videos and animations), and the

Arcade (housing several games). As you walk down the "virtual road" and explore the buildings, the Vid Kids (Alex, JJ, Sophia, and Rosia) give you tips for touring the program.

At the Factory, the reference screen is colorfully tailored for kids. They can search through an alphabetical list of all the articles or by category. If they want to sit back and be entertained, the Vid Kids can present their own narrated tour on topics like astronomy, mathematics, history, and literature. There's even a Globe and a Timeline dating back five billion years so they can look up articles according to their locations or what period of time they occurred.

Just like the big-kid encyclopedias, you can click highlighted words and jump to related articles or get references for further reading on a topic. You even can save entries onto a notebook if you're working on a school report.

Moving down the road, the Movie Theater looks just like a real theater with a big screen for the videos. Unfortunately, you have to scroll through all 120 images—there's no way to search quickly for what you are looking for.

The final stop, the Arcade, contains five games based on material within the encyclopedia. There's the Zoomscape Scavenger Hunt, in which you have to maneuver through the halls of a three-dimensional museum looking for specific pictures and racking up points as you try to beat the clock. Three other games are a lot like digitized versions of old classics: Letter Rip is a high-tech version of Hangman; Match-O-Rama is a matching/memory game with sound effects; and Puzzle Time lets you unscramble picture puzzles. The final "game" is less of a game and more of a "did-you-know" feature that contains amazing facts.

Just as the program promises, the *Random House Kid's Encyclopedia*, with a street price of \$40 to \$50, is so much fun that your children ages 7 to 12 will love using it. Thanks to the two CD-ROMs it uses, the Kid's Encyclopedia is extremely graphical and has lots of sound. In fact, it's the only one that has audio narration in about 1,000 of its articles. However, with only 2,000 articles, it doesn't contain as much information, or as detailed information as you might find in, for example, Compton's. Also, we were disappointed that the on-screen help wasn't as

	Interface	Age Group	Detail Within Articles	Scope of Topics	Use of Multimedia	Search Capabilities
1995 Grolier Multimedia Encyclopedia	★★★	Teen to Adult	★★★★*	★★★★*	★★★★*	★★★★*
Compton's Interactive Encyclopedia	★★★★	Elementary to Adult	★★★★	★★★★†	★★★‡	★★★★
Heinemann Children's Multimedia Encyclopedia	★★	6-12 year olds	★★★	★★	★★★★	★★
Microsoft Encarta '95	★★★★	Elementary to Adult	★★★★	★★★★	★★★★*	★★★★*
My First Encyclopedia	★★★★	3-6 year olds	★	★	★★★★	N/A
Random House Kid's Encyclopedia	★★★★*	7-12 year olds	★★	★★	★★★★	★★
Webster's Interactive Encyclopedia	★★	Teen to Adult	★★†	★★★	★★	★★†

a-Detail is second to none. b-Covers widest range of topics. c-Grolier uses multimedia in innovative ways (ties with Encarta). d-Most search options (ties with Encarta). e-Encarta weaves multimedia throughout program (ties with Grolier). f-Innovative Proprietary puts it all in one place (ties with Grolier). g-This colorful interface will knock your socks off.

Compare the 1995 encyclopedias at a glance. The lowest rating is one star, the highest is four stars.

kid-oriented as the program itself. But if you're looking for a program that will get your kids interested in learning, this one is a fine candidate for the job. If you're worried about your kids outgrowing the program, consider this: By the time they are tired of it, you'll want a new encyclopedia with updated information anyway.

Random House Kid's Encyclopedia, \$40-\$50
Knowledge Adventure
(800) 542-4240
(818) 542-4200

■ My First Encyclopedia

Looking for a program for a child between the ages of 3 to 6? Knowledge Adventure has an encyclopedia for these pre-readers called *My First Encyclopedia*.

My First Encyclopedia is very different from the rest of the encyclopedias. You don't really go to article screens and search for words and topics. Instead the encyclopedia is set up around a large, on-screen tree. Children "climb" up and down the tree, clicking on objects and people to learn more about the world.

For example, click on a cat sitting in the tree and a "Real Kid" will pop on-screen and tell you about what a cat likes to do and how it purrs. Or go into one of the 10 Learning Rooms. Throughout the rooms are objects from topics like astronomy, anatomy, buildings and towns, food, animals, and geology. You can click on the object to hear more about it. Or you can sit in on a question-and-answer session on the topic, color pictures with digital colors, or play interactive activities.

For instance, enter the Anatomy and Medicine room and learn about X-rays, bones, and hearts. Then you can listen in on a question-and-answer session or play a body parts matching game.

The information in the encyclopedia isn't meant to be a complete reference tool. There are only 575 narrated entries and the information is basic. It might tell you an owl can see in the dark, the moon moves in front of the sun when there is a solar eclipse, or that you can find elephants, oranges, and pyramids in Africa.

For a street price of about \$35 to \$40, the encyclopedia will get children excited about learning on the computer. And there's no reading here because it's all narrated. You click on pictures and icons, and a Help icon brings up videos of Real Kids who tell you about rooms you can go into or what to do.

My First Encyclopedia, \$35-\$40
Knowledge Adventure
(800) 542-4240
(818) 542-4200

■ Heinemann Children's Multimedia Encyclopedia

Reed Technology & Information Services recently introduced the *Heinemann Children's Multimedia Encyclopedia*, based on the 11 volumes of the *Heinemann Children's Encyclopedia*.

The encyclopedia features 11 buttons for each of the volumes: People, Animals, Plants, Earth and Beyond, Travel and Communications, Famous Men and Women, Technology at Work, Countries and Homes, Arts and Entertainment, Sports and Leisure, and the Index. From here

you can go a particular volume, scroll through all the articles alphabetically, or search for a particular word or phrase.

In addition, there is a button that will take you to a list of all the videos in the program. Words in capital letters within the articles are linked to related articles, and advanced features let children add their own notes to an article or use bookmarks to quickly return to a topic.

The articles are written for children ages 6 to 12 with a little more detail than you might find in the *Kid's Encyclopedia*. As an added bonus, the captions for images are narrated to children. The program is easy to navigate, but it may not be quite as entertaining or have as much "flash" as the two kid's encyclopedias by Knowledge Adventure. You can purchase the *Heinemann Children's Multimedia Encyclopedia* directly from the company for a suggested retail price of \$69.95.

Heinemann Children's Multimedia Encyclopedia, \$69.95
Reed Technology and Information Services
(800) 922-9204
(301) 428-3700

Out of all the encyclopedias available, we pick the 1995 Grolier Multimedia Encyclopedia. It has lots of multimedia and innovative ways of putting multimedia to work. It also has powerful search features and tons of detailed articles. When you add it all up, it may not be as kid-oriented as other references, but Grolier has the best features to carry you over the long haul. ●

by Cindy Krusheniky

They always say...

"The Right Accessories Make An Outfit Work."



All the right accessories include state-of-the-art surge protection with features to fit every user's needs. Prevents damage to your valuable equipment, and it's guaranteed with the best Equipment Repair/Replacement Warranty available. Glarecare™ Screen Filters reduce user discomfort and sharpen on-screen images to crystal clarity. Select adjustable copyholders, wrist rests, and back cushions for maximum comfort and productivity. ACCO Computer Accessories will make your outfit work. For more information, please call 1-800-ACCO-INC (1-800-222-6462), 7:00 a.m.-6:00 p.m. CST.



ACCO.

Getting Started With Quicken: Part III

Miraculously, you've survived another tax year. Thanks to some creative (but legal) accounting, and Uncle Sam's generosity, you find yourself with an unanticipated tax refund. Should you:

- take the family on a fabulous weekend vacation
- buy some outrageously self-indulgent new toy
- check out investment possibilities with Intuit's *Quicken 4 Deluxe for Windows* CD-ROM

If you chose C, you're probably the kind of person who lives for the future. But with some careful planning and Quicken's money management tools, you may be able to parlay that extra cash into a comfortable bundle that will pay for the weekend getaway and an extravagant trifle or two.

Remember that putting your money into an uninsured investment is always risky. There's no guarantee that you won't leave the scene driving on "empty." If you can't afford to lose money, or you don't have at least three to six months earnings squirreled away for unanticipated emergencies, don't take chances. Quicken's financial planning tools are very helpful, but they can't promise a profitable return on your investments.

■ Ask The Experts

If you're a novice investor, visit "Ask the Experts" in the Quicken Financial Suite. Here *Newsweek* columnist Jane Bryant Quinn, and financial journalist Marshall Loeb clarify difficult concepts by answering questions on topics such as risk vs. reward; bonds and savings accounts vs. the stock market; and load vs. no-load mutual funds. Serious investors will find much of this advice elementary. But if you're the kind of person who thinks portfolio diversification means opening a new savings account at a different bank, Quicken's tutorials will clear up some popular investment misconceptions. So let's begin . . .



If you haven't launched Quicken, double-click on the Financial Suite icon in the Quicken program group, then click on the Experts "room." If Quicken is up and running, select Ask the Experts from the Add-ons menu. When the Ask The Experts screen appears, click on a topic. At the end of each video presentation there's a narrated summary of Quicken features designed to help you carry out the experts' advice. To replay this summary, click the Quicken Info button.

■ Managing Your Portfolio

After completing the tutorials, it's time to get down to business. Quicken can't build an investment portfolio for you, but it will help you gather information about potential investments. Plus, it monitors investment performance, giving you a better sense of capital gains or losses.

To get Quicken to track investments, set up a separate mutual fund investment account for each mutual fund in which you have shares. If you own stocks and bonds, open a separate

account for every brokerage firm that sends you a statement. (A **mutual fund** is a company that pools resources from thousands of small investors to purchase stocks, bonds, or money market securities.)

Quicken needs to know how much your investment assets are currently worth. Let's use stocks and bonds as our first example. In Quicken, click on the Accts icon in the iconbar or choose Create New Account from the Activities menu. When the Create New Account dialog box appears, click on the Investment button, then enter a name for your investment account (e.g., Stocks and Bonds, Sue's College Fund, etc.). If transfers to and from this account should be reported to the IRS, select appropriate tax schedules from the Transfers In and Transfers Out drop-down menus (e.g., 1099-DIV for dividends income or 1099-INT for interest income).

When Quicken asks if it should add a Portfolio View icon at the bottom of the Register window, select Yes. Clicking on this icon allows you to update the prices of

securities in your Quicken investment portfolio, either manually or via modem. If you use a modem, Quicken gives you three free "last price" updates for your stocks and mutual funds. This service is available seven days a week, 24 hours a day. After the third update, you have the option of signing up for the service.

Once you set up a Quicken Investment account, record the current cash balance for that account, plus information about all your securities. Double-click on the account name if it's visible or click on the Accts icon to open the Account List, then select this account to update the register. Find the last statement you received from the brokerage firm. Enter the date for that statement, then select Transfer Cash In (Xin) from the Action drop-down menu. Specify the name of the account in the Xfer Account field so that the starting cash balance transaction doesn't affect other Quicken accounts. Enter the Cash Balance amount in the Amount column. Then click Record.

Now you're ready to enter information about securities in this account. Choose Security from the Lists menu to call up the Security List dialog box, then enter the security's name, its symbol (the abbreviated name of the company issuing the security), the security type, and its estimated annual income. You'll need to enter the Security Symbol only if you plan to update Portfolio prices online or import price data from an ASCII file. Otherwise, you can leave it blank. Repeat these steps for all securities held by that brokerage firm.

You should list how many shares of each security you have. This is done by clicking the More button in the Investment Register iconbar, then selecting ShrsIn (Add Shares to Acct) or just selecting ShrsIn from the Action drop-down menu. Enter the date you purchased the shares, the number of shares bought, and the price paid per share. If you want to figure in the cost of a commission or other charge, leave the price per share blank, then enter the total amount you paid in the Total Cost Basis field. Click OK when you're done. Quicken gives you a picture of earnings and expenses.



In Quicken's Financial Suite, users can get answers to financial questions from Jane Bryant Quinn and Marshall Loeb.

Selling securities also counts as a transaction that you should record in your investment register. Select the Sell button from the account iconbar to bring up the Sell Shares dialog box. Enter the date on which you sold the shares. Tab to the Security field to select the security's name from the drop-down menu. If you bought shares of this security on more than one occasion (i.e., 50 shares in 1992 at \$15/share; 75 shares in 1993 at \$13/share; and 100 shares in 1994 at \$20/share), sell off shares from the 100-share "lot" because you'll realize fewer capital gains and pay less in taxes.

Investment registers behave like other Quicken registers. You can edit an entry field by clicking in it to highlight it, then entering new information. Or, after the transaction field is highlighted, click on the Edit button in the iconbar at the bottom of the investment window. To delete a transaction, select it with

the cursor, then choose Delete Transaction from the Edit menu (or press CTRL-D). To set up a Reminder (so Quicken lets you know when an action needs to be taken), click on the More button in the Investment iconbar, then choose Reminder (Reminder transaction) from the drop-down menu. Enter the date on which you want to take action. Tab to the description field and write the reminder. Use the Memo field for additional information. Click OK. Now Quicken provides an "investment reminder" whenever you launch the program, although you must proceed to the investment register to view the actual message.

Once you set up an investment register, you can check Portfolio View for an investment summary. The Portfolio View window lists securities alphabetically with their current market value, number of shares owned, amount of money invested, return on investment, and other essential data. Click on the Prices button to view a history of price changes for a particular security, or select the Graph button to chart a security's price history. You even can enter new information. For example, you can record securities you've bought or sold, investment income received, or purchases of additional shares bought with money paid to you by that security. You also can use Portfolio View to update the market value for a particular security.

Portfolio View features six ways to view investments. Just click the View drop-down menu to make a selection. Options include:

Holdings (total value of your investments); Performance (how well each investment is performing); Valuation (how much an investment is worth compared to how much it cost); Price Update for price trends; and Custom for two personalized views that you set up. From the Portfolio View window, you can print a Security Report summarizing portfolio activity, or copy the report to the Clipboard for pasting in another Windows application.

The next time you receive a statement from your broker, remember to reconcile your investment account in the register. Choose Reconcile from the Activities menu. Then enter



Quicken's menus and dialog boxes make it easy to enter information about your investments.

amounts for the statement's starting and ending cash balances. Also enter the date of the statement ending balance. After reconciliation, figures in Quicken should match the brokerage statement.

■ Mutual Funds

Quicken handles a mutual fund investment account in much the same way as a regular investment account, but it tracks share balance rather than cash balance. (To track cash balance, set up a regular investment account instead.) If you own shares in a single mutual fund, you may not need to use Quicken to monitor account activity because you probably receive regular statements from your fund manager. If you want to keep all personal finance information in one location, or if you want to ensure that Quicken presents an accurate picture of your net worth, set up a mutual fund investment account to advise Quicken of these activities.

Maintaining a Quicken mutual fund account means keeping a record of all shares bought and sold, plus entering transaction dates. Setting up a mutual fund account requires the same steps as a security account, with a few exceptions.

Click on the Accts icon, then select New from the Account List iconbar. When the Create New Account dialog box appears, choose Investment. Enter an account name in the Account Name field (use the name of the mutual fund). If earnings from this account are tax free, mark the Tax-Deferred Account check box. If not, use the Transfers In and Transfers Out drop-down menus to indicate the tax forms or schedules on which transfers should be reported. After you click OK, Quicken creates the account.

For income tax reporting purposes, you must maintain a complete transaction history for this account, beginning with the date you purchased your first shares. If you prefer to enter this information later, create an opening balance for the account based on information in the last statement. Note the number of shares and the price per share.

Quicken lets you enter information directly into the mutual fund register. Just move to the register's first empty row and begin with the purchase date. Then Tab to the Action field. For a new purchase, select BuyX (Buy &

Quicken lets you enter information directly into the mutual fund register.



Transfer) from the drop-down menu. If you'd like to record information about shares previously purchased, select ShrsIn (Add Shares to Acct) from the drop-down menu.

Quicken also lets you enter account information on special "forms." Sometimes the forms are easier to use than the register because each one has optional context-sensitive Help. A form also may be a timesaver because it lets you enter information for several transactions at one time. Quicken will write this information as separate transactions when it updates the account register. For example, if you receive interest, dividends, and a capital gains distribution from the fund at one time, use the Income button in the Mutual Fund Account iconbar to record all these transactions on a single form. When Quicken updates the register, it records a separate transaction for each transaction on the form.

After selecting the Income button, the Record Income dialog box appears. Type in the date of the distribution, rather than the current date or the date you received the fund distribution. It's important that 1994 capital gains be calculated as taxable income for 1994 even if received in 1995. Press the TAB key to bypass the Account field. Examine your mutual fund statement to determine the type of distribution you are receiving. Then enter the amount of that distribution in the appropriate field (i.e., dividend, interest payment, or capital gain). In the Transfer Account field, click on the drop-down list to select the name of the account where you deposited the funds. Click on OK to update your register. Similarly, click on the Reinvest button in the Investment Account iconbar to record purchases of additional shares bought with dividends, interest income, or capital gains.

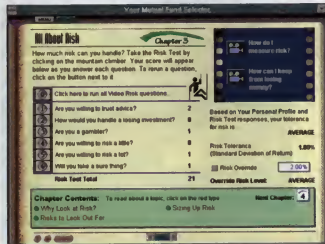
Like a regular investment account, clicking on the Port View button in the mutual fund register displays information about the mutual fund and lets you enter current price per share information. If you have more than one investment account, select All Accounts from the drop-down menu to the right of the current date. Then you'll be able to update any account on the list. From the Port View window, you also can view and print reports or update the market price of shares in your mutual fund.

■ Investor Tools

Your Mutual Fund Selector (MFS) and the Tradeline Electronic Stock Guide (TESG) are additional Quicken tools that investors will find useful. They're available from the Library of the Quicken Financial Suite or from the Add-ons menu in the Quicken menu bar.

Your Mutual Fund Selector. MFS is an invaluable tool for a novice investor. It's an "ActiveBook" (or interactive book) designed to simplify the time-consuming task of choosing mutual funds. MFS uses your answers to questions about your financial situation and risk profile to present a short list of appropriate mutual funds.

Like a printed book, you move forward or backward through MFS chapters by turning pages. You can mark pages for reference by tagging them with an electronic Bookmark. Use the Add Note feature to attach personal comments to pages and



Your Mutual Fund Selector builds your personal investment profile by analyzing your willingness to take risks.

look up information on specific topics by searching the index. Many pages contain helpful charts, graphs, and illustrations.

MFS offers video clip tutorials to help you get started. Video clip presentations answer common questions, such as "How can I keep from losing money?" and "Are there hidden costs in mutual funds?" You begin by completing a Personal Profile worksheet using information from last year's income tax return and by providing a figure for current retirement savings.

Every chapter has jargon-free articles with book pages that may be printed or copied to the Clipboard. If you're stumped by investment terminology, you can look up a definition in the book's online glossary. The MFS glossary can be made context-sensitive by checking the Underline Glossary Items command (available from the Menu button). Double-clicking on an underlined word displays its pop-up glossary definition.

MFS contains information on 1,000 mutual funds. As you work through chapters in the book and complete the interactive worksheets, you get helpful advice on what investment factors to consider (e.g., whether to go with taxable or tax-exempt investments, whether to put some of your portfolio in international stock funds, etc.). MFS will eliminate funds that don't match your investment profile.

Eventually, MFS recommends a list of funds based on your investment preferences, budget, financial needs, and goals. For example, if it determines that you're a conservative investor, it won't suggest an aggressive mutual fund that tries to get the biggest gains in the shortest period of time. If you're planning to cash in after a couple of years, it won't advocate a mutual fund expected to do better over the long term. You also can ask it to suggest "socially responsible" funds, but this will narrow your fund choice dramatically. You may have to rethink some of your personal preference choices in order to get an initial list.

MFS uses information provided by Morningstar, a leader in mutual fund research and analysis. It bases its information on data received as of May 31, 1994. You can click on any fund in the MFS list for up to 10 years of past returns, required minimum investment data, Morningstar ratings, loads, and fees. Before

MFS contains information on 1,000 mutual funds.



making any decisions, obtain a prospectus that identifies the fund's management company, outlines the fund's investment objectives, and assesses its risks.

Tradeline Electronic Stock Guide. TESC is another financial reference tool. Instead of focusing on mutual funds, it examines performance data for more than 6,000 active New York Stock Exchange, American Stock Exchange, and NASDAQ securities, plus leading market indicators. You can locate information about a particular stock by doing a name search. Simply click the Search button on the Tradeline toolbar or choose Name Search from the Tradeline Security menu. Several charts and other descriptive information for that security appear on-screen.

Alternatively, you can use Tradeline's Screening function to pinpoint potential

investment opportunities. Click the Screening button on the Tradeline toolbar or select Screening Criteria from Tradeline's Security menu. When the screening template appears, choose criteria that Tradeline should consider. For example, you can tell it to look for stocks on a certain exchange, stocks with capitalization greater than \$ million dollars (calculated by multiplying outstanding shares against closing price per share), stocks with a Standard & Poor's risk rating of AA or better, and much more. Unfortunately, it searches for only one variable at a time. When you press the Results button, Tradeline displays an alphabetical list of all stocks or indices meeting your criterion. It also displays security charts if you click on the Display button. Any chart may be printed.

Using TESC's 52-week price chart, investors can track weekly, high, low, and closing prices. Closing prices may be downloaded to your investment portfolio's Closing Price Chart. Alternatively, you can include data entered in Quicken into the Tradeline Closing Price Chart.

TESG provides critical stock performance measures such as Price/Earning Ratio, Earnings Per Share, Shares Outstanding, and Standard & Poor's Quality Rating for each listed stock. A Total Return chart compares a stock's total returns for one-week, one-month, three-month, one-year, three-year, and five-year periods against the Standard & Poor's 500 Index. You can chart the price performance of up to six securities for comparison purposes.

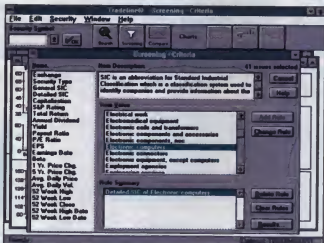
Information for this guide is current up to Aug. 31, 1994. If you're hoping to follow the

market, you may want a subscription for either quarterly or monthly security updates. For more information, call IDD Information Services (TESG's publishers) at (212) 323-9107. This guide is also available online through Prodigy (800/776-3449) or from Dow Jones News Retrieval (800/522-3567). ●

by Carol S. Holtzberg, Ph.D.

For More Information:

Quicken 4 Deluxe for Windows (CD-ROM), \$59.99
Intuit
(800) 624-8742
(415) 322-0573



While Tradeline Electronic Stock Guide's Screening function lets users search for investment opportunities, it only searches one variable at a time.

How To Buy A Database



You've been running a small, tree maintenance business for a couple of years. The business hasn't grown as much as the young elms you planted, but you're about to outgrow your filing cabinets. You're wading through stacks of paper to determine which of your clients' bills are past due, and you can't find the list of trees that need to be checked next week.

It's time for a database.

What is a **database**? It is, in its loosest definition, any type of program that stores information for you. That information could be sorted, or culled and analyzed to produce graphs or charts. The information that comes from your database depends upon the information you put into it.

Your business owner could enter the names of all his clients in a database and list the species of trees on their property. This information could be hooked to other applications, such as word processing programs. With all the appropriate data entered, the business owner could do information searches in order to maintain his business without fighting through stacks of paper. For example, if a state agency placed an alert that a potentially harmful parasite had been reported in the area, he could make a list of trees the disease might infect and generate a special mailing to his clients with those trees.

Databases can automate many tasks; however, the type of database you purchase depends as much on the information's end use as

the user. The software market is filled with database products ranging from rudimentary programs that allow you to make labels for mailings to powerful applications that track the number of widgets sold by time of day.

There are several types of databases. We'll cover three of them: the relational, the flat file, and the free-form database.

■ Types Of Databases

The **relational database** uses a detailed set of constraints to enter, manipulate, and protect information. The rules governing relational databases are based on mathematical concepts. **Fields**, which are lines for entries in a database, can be constructed so the designer can specify that the information for a certain field be only a numeral. This ensures that text can't be entered into this field. These types of structured databases can be powerful tools in your computing arsenal.

Information is entered into a form in the **flat file**, or flat form, database. This database doesn't have many fields for cross linking or sorting, as these databases are generally used for mailings. However, sorting in zip code or alphabetical order can be done. Data can be merged with other applications to generate custom letters.

As its name implies, the **free-form database** allows you to input information without having to rely on the structure of a form. Some applications are equipped with templates, giving users the option of structuring input, but many people prefer these databases for their flexibility.

Many different database applications are on the market, and still more products are part database, part personal information manager (PIM), or part spreadsheet. Some PIMs, like *Ascend* or *InfoSelect*, also function as free-form databases for lists or notes. (See the chart for some database examples.)

■ Buying The Database

Before purchasing a database, you need to make sure it meets your needs based on how you plan to use it. Many

users say their selection of a database, as well as their decision to continue using a particular one, depends upon whether the application is simple to set up and use and produces reports and graphs quickly. A good graphical interface is also mentioned as a selection criteria.

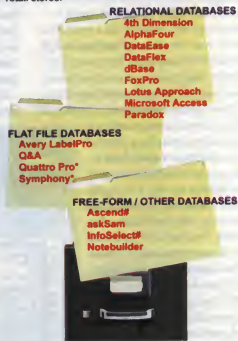
"I have been using *Q&A* for a number of years now," says Gary Nakamura, owner of All Art Services in Calgary, Canada. "Since my databases are no larger than 1,500 records, I find it very easy to use, and it is powerful enough for all the searches and reports I need to generate."

The ability to integrate database information and transfer it to other programs is also an important feature. For example, some businesses may need to take financial information and link it to a spreadsheet to analyze sales figures versus expenditures.

Once you select a database, it doesn't have to be the only database on your hard drive.

Database Software

Here are some examples of each type of database. These products can be found at most computer, retail stores.



*These spreadsheets also have capabilities to store information as flat file databases.
#These applications function as personal information managers.

Several small business owners keep more than one database active because one product doesn't usually fit all people or tasks. One database may track clients and prospects best while another may be better suited for tasks such as tracking records of employees, inventory, or invoices. Some businesses even have one database just for generating mailing lists.

Specialized databases for certain professions also exist. For example, health professionals can enter data on their clients' fitness or eating habits into a program to prepare graphs demonstrating how caloric intake breaks down nutritionally.

■ Sophisticated Databases

In a very informal straw poll of computer consultants, most of whom solely tackle database issues, they say their primary source of new clients is small/home business users unable to use a recently purchased database. For example, *FoxPro* is a popular application; however, one seasoned user, who is also a consultant, says he has found that it's hard for new users to work with *FoxPro* unless the database has been developed particularly for them.

Database developers or development tools, such as *DataEase* and *DataFlex*, aren't databases right out of the box. These powerful, sophisticated programs are used to create a relational database from scratch or to extract information from a database. (Note: While we mention these databases to show you what's available, they're more advanced than what most novices will want to use.)

The consultants say choosing a database that can work well for you and your business is important, but sometimes, in designing a program for complex, customized tasks, you may need assistance. More often than not, problems arise when trying to tame the very powerful relational databases.

■ Purchasing Tips

Microsoft *Access* has become one of the more popular database programs among power users and novices. Why? It was offered at an attractive price when it was first released about three years ago; it was easy to use, and several users have said *Access* is a program people can "grow into" as they became more comfortable with manipulating and entering data.

Subgroups within many larger user groups are a good place to gather information and make contacts before and after you've purchased a program. Another tip

from many database users is to look at your user group's library for shareware and free-ware database programs. Many of these are specifically designed for home business applications. Two such programs are *File-Express* and *PC-File*.

Another quick caveat: given the fluctuations in the computer software industry, some information about software availability is rapidly changing. When larger software companies purchase a smaller one, the powers often decide to eliminate competing products because of an ex-

isting one. Therefore, it's a good idea to use a toll-free number and request information regarding the latest version of any product. (See "In A Nutshell" for more database buying tips.)

With the tons of information bombarding us each day, it makes sense to collect and compare that data with the assistance of your PC. Purchasing a database is just one step toward taming the paper tigers lurking around your jungle. ●

by Linda Dailey Paulson

In A Nutshell

When buying a database, you'll want to compare apples to apples. You may sort through a list of programs gathered from user group acquaintances or online correspondents. By process of elimination, you might decide you don't want a program that could take several months to learn.

Regardless of the additional criteria you select, there are four crucial features you should consider:

■ Ease of Use

How easy is this program to use? Can I begin using this program right out of the box? Do I like the interface? Can I produce the reports I need without a great deal of effort or outside help?

Some people may prefer a free-form database, such as *InfoSelect* or *askSam*, because they can opt to input data on a "notecard" or select a predesigned template. Ease of use is usually cited by buyers as the primary criteria used when choosing any program. Versatility also gets points with new users.

■ Online Help & Tutorials

Can this program provide help while I'm using the software? Are there any features that can walk me through the process of creating my database?

These are questions to which many software publishers have responded. Many of the popular database programs have some sort of ether genie waiting to grant immediate help. This online assistance can speed you along in learning and using your database.

■ Compatibility

Getting along is one of the keys to survival, even in the world of bits and bytes.

Having a database that works with other applications you want to use can assist your productivity.

You may want to ask yourself: Does this database allow me to freely import and export data between the program I use most frequently? Can I easily create documents and merge data? Can I use SQL queries to find and create reports? (Structured Query Language [SQL] is a database sublanguage used in querying, updating, and managing relational databases.) Can I save this data and then use it in a different database?

The application suites, such as WordPerfect's *PerfectOffice* and Microsoft Office Professional, offer an array of business applications that cohabit peacefully on your hard drive, removing worries about compatibility issues.

■ Can I Grow Into This Product?

It may not seem probable now, but in a few years you may need more power from your database or want to wean yourself off templates and design your own input forms. As your business and computing skills grow, you'll want to make sure you don't outgrow the application you've chosen.

As you become an increasingly sophisticated user, you'll look for more sophisticated means of manipulating your data. Can your database accommodate you for many long years of use? ●



Working With Microsoft Word 6.0: *Part II*

The Art Of Page Design

When you're given an area—be it a room, an office, or a home—you make it your own by giving it some of your style. You do this by hanging pictures, painting or papering walls, and displaying some of your personal possessions.

Your papers, invoices, and memos also can maintain a design that marks them as your own. And instead of paying a professional printer to design and print letterhead and cards to convey this image, all you have to do is understand how to format your word processing documents.

That's what you'll learn in this article, the second part of our tutorial on Microsoft Corp.'s *Microsoft Word 6.0*. First, we'll take you through the basics of formatting. Then we'll discuss some advanced design topics.

■ The Page Setup

The look of your document is affected by the way your page is set up. By changing page orientation or margins, you can change your documents' appearance. Although it's easiest to make these settings before you begin, they can be changed at a later stage.

Paper size and orientation. To change the size of your paper or the orientation of your page, choose *Page Setup* from the *File* menu. In the *Page Setup* dialog box that pops on-screen, select the *Paper Size* tab. Under the *Paper Size*

section, choose *Letter*, *Legal*, *Executive*, or another size by using the scroll-down list that appears when you click on the arrow to the right of the *Paper Size* box. Under the *Orientation* box, select *Portrait* to make the long side of the paper vertical and *Landscape* to make the long side of the paper horizontal. Then click *OK*.

Margins. To change margins, choose *Page Setup* from the *File* menu and select the *Margins* tab. Type in the margin measurements for top, bottom, left, and right margins, or select them from the scroll-through lists. The layout in the *Preview* box will give you an idea of what your new margins will look like.

■ Formatting Characters

When you start typing a new document, your text will appear on-screen in the font or **typeface** (the character design) and **point size** (there are 72 points in an inch) preset for Word. You can achieve different looks by altering these formats and giving the font a different style or attribute.

Font and size. The second and third text boxes on the *Formatting* toolbar list the font and the size. To change either one, click the arrow to the right of the font or size box and make your new selection. You also can change a font and its size by choosing *Font* from the *Format* menu and



selecting a new font in the Font box and a new point size in the Size box.

Font attributes. To format a character (a letter, number, symbol, punctuation mark, or space) or a word, highlight the text and apply a different attribute like bold, italic, underline, strikethrough, or all caps (see Figure 1). Or, to apply bold, italic, or underline attributes, click the B, I, or U buttons on the Formatting toolbar. To use other attributes, choose Font from the Format menu and place an X in the boxes in Effects that you want applied. The formats will be applied to the on-screen text.

You also can apply formatting as you enter text. To do this, first select the attribute, then begin typing. The text you type will automatically have this format.

Once you have formatted your text, you can apply this format to other text. To do this, select the text that is formatted correctly and double-click on the Format Painter button on the Standard toolbar (the button with the paintbrush). Your mouse pointer will change to a paintbrush. Select the text you want to format with it (you can do this for several selections). Once you're done, click the Format Painter button again and the mouse pointer will return to normal.

Hidden text. If you'd like to place notes or comments in a document, but don't want them printed, use the hidden text format. However, you can see only hidden text on-screen if you choose to display things like paragraph and tab marks. If Word isn't displaying these, click the Show & Hide button on the Standard toolbar (the one with the paragraph symbol).

Spacing and automatic kerning. To change the distance between characters, choose Fonts from the Format menu, then select the Character Spacing tab in the dialog box. In the Spacing box, type in a new distance. Another form of character spacing is called **kerning**. This slightly reduces the spacing between certain letter pairs to give your document a better overall appearance. To do this, choose Fonts from the Format menu, select the Character Spacing tab, and click on the box to the left of the Kerning for Fonts box.

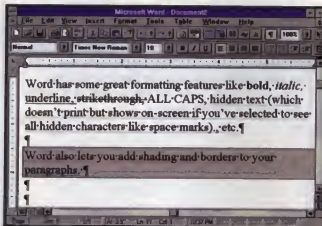


Figure 1: Word's formatting features include character formatting, like bold or italic text, and paragraph formatting, like borders and shading.

NOTE: You can change Word's default settings by clicking the Default button before exiting the Font dialog box. Choose Yes in the dialog box that then pops up and the current font settings will become Word's default.

■ Formatting Paragraphs

The way your document looks also depends on how you format its paragraphs. To change the look of your paragraphs, select the paragraphs you want to format by highlighting the paragraphs or, if it's only one paragraph, by positioning the cursor within the paragraph or selecting a few words in the paragraph. Then select a format, some of which we discuss below.

NOTE: Word only formats the paragraphs you select and applies the formatting to the entire paragraph. If you only want part of a paragraph formatted, you'll have to format the text as characters.

Justification. One paragraph format is justification, or the way that text is lined up. Word is preset to align text on the left-hand side. But you can choose to center text, have it align on the right-hand side, or make it justified

(stretching across to align on both right- and left-hand sides). To align text differently, first select the paragraphs you want to align. Then click the button on the Formatting toolbar that gives you the correct alignment—left align, right align, center, and justify (see Figure 2).

Line spacing. To change the spacing between your paragraph's lines, choose Paragraph from the Format menu. Click on the Indents and Spacing tab and select the type of line spacing you want (single, 1.5, or double) under the Spacing heading in the Line Spacing box. If you select At Least or Exactly under Spacing, you'll need to type or select the line spacing you'd like in the At box. When you're done, click OK.

Borders and shading. You can easily add borders, rules, or shading to any or all sides of a paragraph. To give a paragraph a border or shade, select the paragraph you want to format. Select Borders and Shading from the Format menu, then click on the Borders tab. In the Border box, choose the sides you'd prefer to include borders on by clicking the sides of the model where you want to add or change a border. In the Line box, select the style of line you prefer. If you'd like to add shading, click the Shading tab and select the percentage of shading you prefer. Then click OK.

Drop caps. To create a paragraph with a large initial letter (sometimes called a **drop cap**), position the insertion point within the paragraph you want to give this effect. From the Format menu, choose Drop Cap. Under Position, select either Dropped (to drop the letter within the text) or In Margin (to have the letter outside the margin). In the Font box, select or type the font for the dropped letter. Specify the height of the letter in the Lines To

Drop box and the amount of space between the letter and the words in the Distance From Text box. Then click OK.

NOTE: You can only see the drop cap on-screen in Page Layout view. If you're in Normal view, Word will ask whether you want to switch to Page Layout. Click the Yes button. To check if you're in Normal view, click the View menu. The view you're in—Normal, Outline, or Page



Figure 2: With Word's Formatting toolbar, it's easy to left or right align, center, or justify your text with the click of a button.

Layout—will have a dot in front of it. To change to another view, click on its name.

■ Automated Formatting

To simplify text formatting, Word has automatic formatting options. AutoFormat will format an entire document by applying a style (a group of formats identified by a name) to its paragraphs. Styles change the look of the entire paragraph by altering font, text size, line spacing, text alignment, etc., all at once.

When you choose the AutoFormat command from the Format menu, Word will examine your document. It will identify things such as headings and lists and apply appropriate styles to your paragraphs. If you don't like the styles, you can change them through the AutoFormat dialog box. Choose the Style Gallery button in this box and select a **template** (a predesigned document) that contains the style formats you prefer. When you find one, click OK, and then Accept. (For more information about using Word's templates, see "Your Word Processor's Guiding Light" in the February 1995 issue of *PC Novice*.)

The box at the far left of the Formatting toolbar usually has the word **Normal**. This is the Styles box and the default style of **Normal** applies to regular text. When you add things like headings, you can use this box to automatically format them. Highlight the typed heading in your document, then use the scroll-down arrow to select a Heading style. Word will apply the heading style's formats in one step.

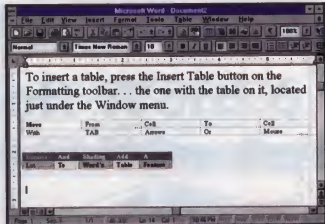
■ Desktop Publishing Features

If you design newsletters, flyers, or other desktop-publishing-related tasks, Word provides some advanced design choices. These include creating newspaper-style columns, using tables, and mixing text with graphics.

■ Creating Sections

The text in multiple-column documents flows from the bottom of one column to the top of the next—like the columns in a newspaper. By using sections, you can change the number of columns in a document.

To divide your document into sections, position the insertion point where you want to begin a section. Choose **Break** from the **Insert**



Tables let you organize information in neat columns.

menu. Under the area called **Section Breaks**, choose the option that describes where you want the next section to begin: **Odd Page**, **Even Page**, **Next Page**, and **Continuous**. With **Next Page**, Word breaks the page at the section break and begins a new page. With **Continuous**, Word notes the new section but keeps it on the same page. With **Odd Page**, Word begins the new section on the next odd-numbered page. And with **Even Page**, Word begins the new section on the next even-numbered page. Once you choose your option, click OK.

NOTE: If you're viewing your document in Normal view, Word will insert a double-dotted line to mark the end of one section and the beginning of another.

■ Using Multiple Columns

Creating equal columns. To create multiple columns, click the **Column** button on the **Standard** toolbar—the button under and between the **Window** and **Help** menus that

shows a two-column layout. Drag your mouse to the right to highlight the number of columns you want and release the button. If you don't have any section breaks in your document, Word will format the entire document into the chosen number of columns. If you do have sections, the section in which the insertion point is located will be formatted with the chosen number of columns.

If you want a portion of your document formatted in a different number of columns, highlight the section with your mouse, click the **Column** button on the **Standard** toolbar, drag the mouse to select the number of columns, and release the button. Word will automatically add the section breaks for you and format the text with the number of columns you prefer. (This is great when you want a banner headline stretching across a multiple-column document.) To view the columns on-screen, you need to switch to **Page Layout** view.

Creating unequal columns. To create two columns of unequal width, choose **Columns** from the **Format** menu. In the **Presets** area in the **Columns** dialog box, select **Left** or **Right**. **Left** makes the left column narrower than the right and vice versa. To create more than two columns of unequal width, type the number of columns you want in the **Number of Columns** area. Remove the X on the **Equal Column Width** box by clicking it. Type your preferred column measurements in the **Width** and **Spacing** boxes for each column. (Width is for column width and Spacing is for the space between columns.)

Another way to change **Width** and **Spacing** is to drag the column marks on the horizontal ruler in **Page Layout** view. Note, however, that if your columns are of equal width, changing the width of one will change the width of all of them. If they're not of equal width, only the column whose marker you drag will be affected.

Adding rules. You also can add vertical lines or rules between columns. To do this, position the insertion point in the section you want to contain column lines. Choose **Columns** from the **Format** menu. Click the box to the left of the **Line Between** check box so that it has an X. Then choose OK.



Microsoft

Word 6.0

provides

some advanced

design choices.

■ Creating Tables

If you're working with columns of numbers or text, you can use a table. A table is comprised of rows and columns marked by gridlines. Each box formed by the intersecting rows and columns is a cell. When you create a table, however, you may not see the gridlines. If that's the case, select Gridlines from the Table menu.

Creating tables. To create a table, place the cursor where you want the table. Click the Insert Table button on the Standard toolbar (the button under the Window menu that shows a table). Then drag your mouse to select the number of rows and columns.

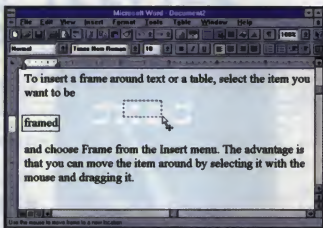
Using tables. To insert items in a table, click in any cell and start typing. To move from cell to cell, click in the next cell, press the TAB key, or use the arrow keys. To start a new paragraph within a cell, press ENTER. You can add, delete, and format text in a cell just as you would anywhere else. The height of the cell will increase as you add items. To change the width of a column, drag the column's right gridline to the place you want it.

Altering tables. To add rows or columns, select the same number of existing rows or columns and click the Insert Table button on the Standard toolbar. (Note that the ToolTip will change to Insert Cell, Insert Row, or Insert Column, depending on what you've selected in your table.) You may be faced with a dialog box, but after clicking OK, Word will insert empty rows or columns above or to the left of the selected rows or columns.

Using borders and shading. For a more professional look, Word lets you add borders and shades. To do this, position the insertion point within the table. From the Table menu, choose Table AutoFormat. In the Formats list that appears in the Table AutoFormat box, select the design you want by previewing the different options in the Preview box as you select them from the list. You also can change a table's appearance by selecting options in the Formats To Apply and Apply Special Formats To sections. These effects can be viewed in the Preview box.

■ Mixing Text & Graphics

When you get serious about designing unique documents, you'll want to do the ultimate in desktop publishing—combine text and graphics. With Word, this is fairly simple.



Frames let you move items in your documents.

Before you can add graphics to your document, you need to position a frame in Word. A frame is a container that can hold a graphic, a table, or text. When a frame is inserted in a document, it pushes the surrounding text aside; the text can either stop above the frame and begin again below it or wrap around the frame. Once an item is placed in a frame, you can move the item around your document by dragging its frame to different locations.

Because Word automatically makes the frame the same size as the item, you can insert a frame around a table or other element. When you insert a frame around text, Word makes the frame as wide as the text column. You also might want to insert an empty frame as a placeholder when you know you'll want to add a table or a graphic later.

NOTE: When working with frames, it's best to work in Page Layout view.

Inserting frames. To insert a frame around text or a table, select the item you want to be framed and choose Frame from the Insert menu. A frame with handles and a crosshatched border



will appear. To insert an empty frame, make sure no text or items are selected and choose Frame from the Insert menu. The insertion point will change to a crosshair. Position the crosshair where you want the top-left corner of the frame. Hold down the mouse button and drag the frame until it is the size you want. Releasing the button inserts the frame.

Sizing frames. There are a couple of ways to resize a frame. To resize by eye, select the frame by clicking the mouse button when it changes to the positioning pointer as you move it over the edge of the frame's handle

boxes. (The pointer changes to an I beam when it's positioned over the contents of the frame.) Then drag the handles that surround the frame. To size a frame to precise measurements, choose Frame from the Format menu. Under the Size area, select Exactly in the Width and Height boxes and type or select the correct frame measurements in the At boxes.

Positioning frames. To position a frame, select it and use the positioning pointer (the four-arrowed pointer) to drag it to a new location. If you have a precise location for the frame, choose Frame from the Format menu and type or select the position's measurements in the Position boxes under Horizontal and Vertical.

Adding borders and shading. To give your frame a border or shading, display the Borders toolbar by clicking the Border button on the Formatting toolbar (the button to the far right) or choose Borders and Shading from the Format menu. Select border and shading options as you did when formatting paragraphs with borders or shading.

Removing frames. If you decide that you don't want a frame, you can remove it by selecting the frame, choosing Frame from the Format menu, and selecting the Remove Frame command.

■ See You Next Time

Now that you know most of the skills necessary to personalize your documents, you have plenty of techniques to practice and designs to try. Have fun! And join us next month for our last Word tutorial, when we'll discuss graphics and frames, outlining, and some of the special applications that ship with Word. ●

by Lori Beckmann Johnson

Microsoft Word 6.0

lets you
add borders
and shades.

Changing Text In WordPerfect

Progress usually happens not all at once, but in many small steps. WordPerfect made one such winning stride when it moved from DOS to Windows and streamlined two key tasks. We'll look at how to move the cursor within a document and how you select a block of text.

Any version of WordPerfect For Windows 6.0 offers many simple techniques for selecting a chunk of text. Selecting text (also known as highlighting or blocking) lets you alter a cluster of typed words. Once text is selected, you can press one or two keys to perform an action on it, such as delete, underline, copy, move, etc.

■ Moving The Cursor

WordPerfect has several key combinations that make moving from place to place in a document a little easier. For example, instead of using the right arrow to move to the end of the line, just press END. To move to the bottom of a document without scrolling through the whole thing, press CTRL-END. (See the chart for more time saving keystrokes.)

■ Select Text

By dragging. The mouse can be used to highlight text by dragging shading across the screen. To do this, use the mouse to point to one edge of the desired text, then hold down the left mouse button as you move the mouse pointer to the other edge. As you move your mouse, shading will expand to highlight the text.

By keys. A more precise way to select text is with the keyboard. In a sense, highlighting text is just another aspect of moving the cursor, so selecting can be done by adding the SHIFT key. Instead of just moving the cursor, hold down the SHIFT key to select as you go.

You also can add SHIFT to any key combination listed in the chart to select a block of text. For example, to select the character to the right of the cursor, use SHIFT-Right Arrow; to select to the end of a line, use SHIFT-END; to select a document, use SHIFT-CTRL-END.

The F8 key also is used for highlighting. Pressing F8 once turns on the shading function. This function stays on until you press F8 again to turn it off. This lets you select with a more hands-free approach since SHIFT is not



required. F8 also offers a special one-key search feature: once you've activated F8, press any letter, number, or punctuation key, and the shading will stretch forward to include it. You also may use the movement keys discussed above to adjust the shading.

By menu. Sometimes it's handiest to select logical sets of words, such as a sentence, paragraph, or page. To do this, use the Edit menu command, then Select to choose the current Sentence, Paragraph, Page, or All of the document.

By point-and-click. One last way to select text is by using the mouse. Move the mouse to a point in the text, then click the left mouse button

twice to select a word, three times to select a sentence, and four times to select a paragraph.

QuickMenu. After you've selected text, you can click the right mouse button to see the QuickMenu. This shortcut gives a list of commands that help you work with the highlighted text.

■ Using What You've Learned

Once you've selected text, you can alter it by using one of WordPerfect's many operations, such as bolding, underlining, italicizing, etc. Note that the text remains selected until you click the mouse or move the cursor. Let's work through some examples, assuming you've already highlighted the text you want to change:

To bold a heading, hold down the CTRL key and press the letter B. Use CTRL-U to underline, and CTRL-I to italicize.

To double underline a word, press F9, the shortcut key for the Font menu. Click Double Underline in the Appearance box just above the center of the screen, then click OK.

To center a heading, select Line from the Layout menu, then Center. (You also can use SHIFT-F7.)

To delete unwanted text, press the DELETE or BACKSPACE key.

To spell check specific paragraphs of a document, choose Speller from the Tools menu or click the right mouse button to choose Speller from a QuickMenu.

To print desired text, press F5, the shortcut key for File Print. Note that the Selected Text item is marked; press ENTER to begin printing.

Sometimes you want to copy or move certain parts of a document to other locations. Once the text has been selected, click the right mouse button. A QuickMenu will pop up. Click on Copy or press the letter O. (Or choose Copy from the Edit menu.) Now the shaded text has been copied into a memory buffer from which we can paste it. Position the cursor where you want to add the text, click the right mouse button, and choose Paste (or choose Paste from the Edit menu).

You also can capitalize an entire block of text. Once the text has been highlighted, select Convert, then Uppercase from the Edit menu. (In all versions of WP Win 6.0 and later, you also may choose Initial Caps.) Voilà! ●

by Kendall Callas

Cursor Movements

Use the following keystrokes to move the cursor, using SHIFT with these keys to select text for alteration.

To move and change to	Use the following keystrokes
Next word	CTRL-Right Arrow
Previous word	CTRL-Left Arrow
Next paragraph	CTRL-Down Arrow
Previous paragraph	CTRL-Up Arrow
Line beginning	HOME
Line end	END
Document beginning	CTRL-HOME
Document end	CTRL-END
Screen top	PAGE UP
Screen bottom	PAGE DOWN
Previous page	ALT-PAGE UP
Next Page	ALT-PAGE DOWN

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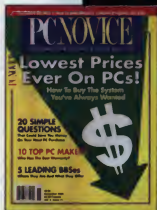
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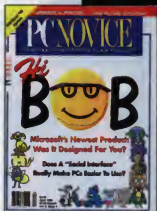
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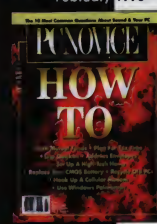
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Working With Ami Pro

Touted as one of the three most popular Windows word processors, Lotus' *Ami Pro* 3.1 is known for speed and easy use. It performs quickly, even on computers with as little as 4 megabytes (MB) of RAM (random-access memory). But as friendly as this word processor may be, it takes time to become familiar with its many features. New users should begin with *Ami Pro*'s QuickStart tutorial (available as an option in the Help menu). We'll examine the interface, focusing on SmartIcons and Status Bar buttons.

■ Smart Fellas Use SmartIcons

There are three ways to accomplish a task in *Ami Pro*. For example, to save a document, select File from the Menu Bar, then click Save. When you click and hold down the left mouse button, a brief description of the selected pull-down menu or command appears in the Title Bar at the top of the screen. You also can save by using the keyboard shortcut CTRL-S, or click the appropriate SmartIcon. The keyboard shortcut is the fastest route, but clicking on a SmartIcon is best for new users.

SmartIcons, the colorful symbols lying at the top of the screen under the Menu Bar, are click-on shortcuts to frequently performed program functions. Rest the cursor on a particular SmartIcon, and its description is displayed. There is a SmartIcon for practically every pull-down menu option, such as creating new files, inserting today's date in an open document, and checking a document's spelling.

SmartIcons are customizable. You can add, move, or remove specific icons; group them to the ones reserved for a particular task lie close together; or display them in a new location

on-screen. To make these changes, choose SmartIcons from the Tools menu. The SmartIcons dialog box appears with options to adjust icon size (choose Icon Size), then Large if you have Super VGA) or set location on-screen (choose Position), then select Floating, Left, Top, Right, or Bottom). If you change icon size to Large, fewer SmartIcons display on-screen, but they're easier to see. If you choose Floating, you can drag the SmartIcon set by moving the pointer to the SmartIcon title bar, then click-dragging the bar to a new location.

Ami Pro has predefined SmartIcon sets as well as specific sets suited for tasks involving graphics, proofing, working with tables, editing, etc. You even can put together a custom-made set. For example, if you frequently work with documents having more than one column, consider modifying the Editing set to include Add a Frame and Modify Frame Layout icons. Drag these icons (one at a time) from the left column in the SmartIcons dialog box to the right column. Remember to click the Save Set button in the SmartIcons dialog box when you're done. This brings up the Save Set of SmartIcons dialog box where you name the new icon set. You don't have to type anything in the File Name field. *Ami Pro* adds the appropriate information.

■ Ante Up At The Status Bar

The Status Bar, located at the bottom of the screen, has nine click-on buttons. Each one acts as a document description or shortcut to a document-formatting option. No help is provided for Status Bar items. To find out what these buttons do, choose Open from the File menu, or click the SmartIcon that opens an existing

file. When the Open dialog box appears, double-click on the file labeled *Mercury.sam*.

Status Bar information will change depending upon the location of the cursor. The Status Bar button to the far left describes current paragraph style. Click it and a pop-up list of other style options appears. You can change formatting for an entire paragraph simply by selecting a new item from this list.

Adjacent to the Style Status button is the Typeface button. It identifies the font in the selected paragraph. You can change the font for an entire paragraph by clicking this Typeface button, then selecting a new font. You also can change the font for certain text by highlighting the text to be modified, then picking a new font from the typeface list. Next to the font button is a point-size button. Select this button to adjust text point size for a whole paragraph, or just highlighted text.

The button next to the point-size button has three separate functions. Click it once to display the current document path (i.e., the directory where the document is saved), twice to view the current date and time, and three times to see the line, column, and page position of the cursor. (You must be in Layout Mode to view line and cursor position.)

Three typing modes are accessible from the Status Bar. The button next to the date/time button determines the current typing mode. The first indicator, Ins, means you're in the Insert mode and can add text at the flashing insertion point. Type indicates the Typeover mode, letting you type over existing text. Finally, there's a Rev, or Revision Marking, mode. When active, it tracks changes made to an original document. The four remaining buttons on the Status Bar provide quick access to alternative SmartIcon sets or move you forward or backward to other pages in the open document.

Ami Pro has several shortcuts to increase productivity. Knowing your way around the program's interface is the first step to becoming a power user. ●

by Carol S. Holzberg, Ph.D.

Using 3-D Ranges In Lotus 1-2-3

Lotus 1-2-3 4.0 for DOS makes it so easy to work with multiple worksheets within the same file that it's difficult to justify keeping related worksheets in separate files. A 1-2-3 file can contain up to 256 worksheets, depending upon the amount of memory in your computer. This lets you keep related data within one file, rather than having it spread out over several single-worksheet files. Managing the worksheets can be done with global formats that span the entire file and by using three-dimensional (3-D) ranges.

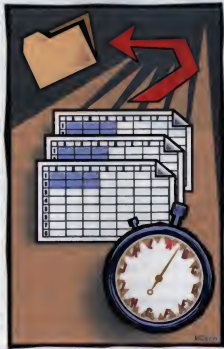
To add a worksheet to a multiple worksheet file, just click on the New Sheet button. Each worksheet within the file is labeled alphabetically, A through IV, but double-clicking on the sheet tabs lets you assign a 15-character name to each worksheet. Move quickly between worksheets by using CTRL-HOME to move to cell A:A1, CTRL-PAGE DOWN to move to the previous worksheet (i.e., from C to B), and CTRL-PAGE UP to move to the next worksheet.

■ 3-D Ranges

When working with commands and formulas in multiple-worksheet files, you can specify 3-D ranges, which contain the same cells across two or more contiguous worksheets. For example, assume you have a supermarket chain with three different locations. Within the same file you have worksheets B, C, and D, each of which contains data for a supermarket location, and worksheet A, which contains the consolidated totals.

To format cells E4..E6 in each worksheet so they display the contents as a percentage (i.e., 13.33% instead of 0.13), use a 3-D range. When highlighting the cells, it's easier to highlight the range in the first or last worksheet, then extend the highlight to the other worksheets by using CTRL-PAGE DOWN or CTRL-PAGE UP. (Note that you must highlight the cells before opening the main menu.)

In our example, start with your cursor in cell B:E4. Type / to get to the main menu and select Range, then Format, then Percent, and then



enter the number of decimal places you want. We'll use two in our example. Press ENTER. For Range to Format, use the mouse or arrow keys to extend the highlighted cell range so it covers cells B:E4..E6. Then press CTRL-PAGE UP twice to extend the 3-D range to worksheet D. Your Range to Format becomes B:E4..D:E6. Press ENTER to format the cells.

If you're using a 3-D range in a formula, type the range into the formula or highlight the range while entering the formula. For example, if you were in a worksheet in cell A:A10 and typed the formula @sum(b:a3..cb4), cell A:A10 would contain the sum of the values in B:A3..B4 and C:A3..B4. Rather than typing the cell addresses, you also could type @sum in cell A:A10, press CTRL-PAGE UP to move to B:A3, press the period to anchor the cell pointer, use the arrow keys to expand the highlight to cell B:B4, press CTRL-PAGE UP to expand the highlight to worksheet C, and press ENTER.

Using our supermarket example, the consolidated worksheet A would contain totals

from the other worksheets, which can be accomplished in different ways. You could include department totals from each location and use the @SUM function to add up the departments within worksheet A for a grand total. You also could use a 3-D range to obtain the grand totals.

For example, assume you wanted a Last Month total for all stores in cell A:B10 and a This Month total for all stores in cell A:C10. In cell A:B10, you would enter the formula @sum(b:b6..d:b6), and in cell A:C10, you would enter the formula @sum(b:c6..d:c6).

■ Helpful Tips

You can make all the worksheets in a file look the same by turning on Group Mode by pressing /, choosing Worksheet from the main menu, then Global, then Group, then Enable. In Group Mode, if you make a change in one worksheet, such as formatting a range of cells or changing a column width, the change is duplicated in the same cells in all the worksheets.

When specifying ranges, be sure to include the worksheet letter as part of the cell address, such as B:F14..C:F16.

To view up to three contiguous worksheets at once, select Worksheet from the main menu, then Window, then Perspective, or click on the appropriate icon.

If you specify a 3-D range as the From range when rearranging data, be sure there are enough worksheets between the first cell of the To range and the end of the file to hold the data. For example, if you copy data from a range that spans worksheets A and B to worksheet C, the file must have at least one more worksheet (D) to complete the copy.

Using 3-D ranges simplifies your work within a multiple worksheet file, but remember if you copy or move formulas with 3-D ranges to files that contain fewer worksheets than are in the 3-D ranges, you might get unexpected results. ●

by Diane Walkowiak

Creating Excel Workbooks

One simple way to keep things organized is with a notebook.

Microsoft Excel for Windows 5.0 uses computerized versions of these organizational wonders to make working with spreadsheets easier. In this article, we'll look at how Excel uses the familiar tools of workbooks and worksheets.

Defining Workbooks & Sheets

An Excel workbook is the file where you work and keep data. Each workbook contains worksheets, also called **sheets**. The typical (or default) workbook in Excel has 16 tabbed worksheets, labeled Sheet1 through Sheet16. The sheet tabs are found at the bottom of the open workbook.

NOTE: If you don't see the tabs in your workbook, choose the Options command from the Tools menu. Select View tab and make sure there's an X in the Sheet Tabs check box under Window Options.

Worksheets contain spreadsheet data while **chart sheets** hold charts. Whenever you open, close, or save your workbook, you're opening, closing, and saving the information on each sheet. To make the workbook easier to use, you can insert, delete, rename, move, or copy sheets.

Moving from Sheet To Sheet

To switch from sheet to sheet within a workbook, select the tab of the sheet you'd like to go. Since you can't see 16 tabs on-screen at once, you may have to click the arrows to the left of the tabs. The middle arrows will move the tabs to the left or right by one. The far left tab displays the first sheet in the workbook while the far right tab displays the last sheet. Note that once the tab you want is visible, you must click it to make the worksheet active.

Inserting & Deleting Sheets

Excel makes altering the number of worksheets in your workbook easy. The maximum number you're allowed is limited only by the amount of memory your computer has.

To insert a worksheet, select the sheet you want to follow the new sheet. Choose the Worksheet command from the Insert menu. A new worksheet will appear in front of the

selected worksheet. The new worksheet then becomes the active sheet.

If you know when you create a workbook that you'll want more worksheets, you can change the number of sheets in the new workbook by selecting Options from the Tools menu. Select the General tab in the Options dialog box and change the setting in the Sheets In New Workbook box. (You can open a new workbook with up to 255 worksheets.) The next time you select New from the File menu, your workbook will have the chosen number of sheets.

To delete a worksheet, click the tab of the sheet you want to delete. Choose Delete Sheet from the Edit menu. Once you click OK to delete the sheet, the tab to the right of the newly deleted sheet becomes the active sheet.

NOTE: To add or delete several sheets at once, select more than one sheet tab. To do this, click the first sheet tab in a contiguous group and hold the SHIFT key while you click the last sheet tab. Excel will add or delete the number of selected sheets.

Renaming Sheets

To change a sheet's name, double-click the sheet's tab. A Rename Sheet dialog box will appear. Type a name and click OK. (You also can choose the Sheet command from the Format menu and click the Rename command to see the Rename Sheet dialog box.)

Moving & Copying Sheets

To move sheets within a workbook, select the sheet tabs with the mouse, drag (hold down the mouse button and move the pointer) them to a new location, and release the button when the black triangle is where you want the sheets relocated.

To copy a sheet within a workbook, select the sheet you want to copy, press the CTRL key, and drag the pointer to the location where you want the sheet repeated. The new sheet will have the same name, but (2) will appear behind it.

To move sheets to another workbook, select the sheets and choose the Move Or Copy Sheet command from the Edit menu. Select the destination workbook and sheet location in the Move or Copy dialog box. After clicking OK, the sheets will move to the specified workbook. Note that in order to move sheets to a new workbook, you must select New Book as the destination workbook in the To Book box.

To copy a sheet to another workbook, follow the directions for moving a sheet, making sure an X is in the Create A Copy box in the Move Or Copy dialog box.

Using Workbook Windows

Multiple windows show different parts of one worksheet or display different sheets in the same workbook. When you make a change in one window, it will automatically be made in the others. When you're finished with a window, you can close it without closing the workbook file.

To create a new workbook window, choose the New Window command from the Window menu. The screen won't change much because the windows aren't arranged properly. To arrange multiple windows, choose Arrange from the Window menu. Select Tiled, Horizontal, Vertical, or Cascade, and click OK.

Organization Is Key

After practicing the above procedures, you won't have any trouble working with workbooks and worksheets in Microsoft Excel. After all, it's just as easy to get around a computerized notebook as it is a regular one. ●

by Lori Beckmann Johnson

Creating Charts With Quattro Pro

Novell's *Quattro Pro 6.0* lets you create charts from your spreadsheet data with just a few clicks of the mouse button. The process is as simple as it sounds: select cells to present in a graph, click on the graph button, then tailor the graph to your needs.

Quattro Pro has one of the most impressive inventories of graph types and backgrounds, making your graphs look as if they were created by an old pro. Now, let's create a graph that will make your friends aware of your newfound presentation skills.

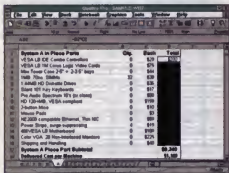
■ Selecting Your Data

Data is information that you keep in **cells** in your spreadsheet. For example, a dollar figure is data, a name is data, or a date is data. If you select one or more cells in a spreadsheet that contain information, you have selected data.

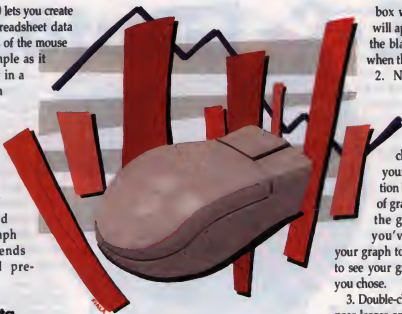
You're going to learn how to make a graph with information that is simply listed in a common spreadsheet, which needs to be opened before you can make your graph.

1. With the mouse, change your view until you see the data you want to graph. Click on the scroll bar arrows to move around in your spreadsheet.

2. Once you see the data you want to graph, drag the mouse across that data. Note that each cell turns black when selected.



All but the first cell will turn black when highlighted, showing you which cells you've chosen to graph.



except for the first one. Don't worry about this. Most spreadsheet software products don't blacken the first cell in a series of selected cells.

■ Creating The Graph

1. Click on the Graph button on Quattro Pro's button bar. It's displayed right underneath the Graphics menu item. Once you click on the Graph button, move the mouse pointer over the spreadsheet. Notice how the mouse pointer has turned into a small vertical bar chart? The appearance of this pointer indicates that Quattro Pro is ready for you to tell it exactly where to place your chart-to-be on the spreadsheet. Draw a



Select a new Color Scheme for your graph's background from the Graph Gallery screen.

box with the mouse. A basic chart will appear inside that box. Note that the blackened cells return to normal when the graph appears.

2. Now select Type from the Graphics menu. A dialog box will appear, showing you how the graph could look if you make a few changes. To select a look for your graph, click on the option buttons to see different types of graphs, or click on pictures of the graphs themselves. Once you've decided what you want your graph to look like, click the OK button to make your graph change to match the look you chose.

3. Double-click on the graph to make it appear larger on-screen. Notice the new toolbar of buttons made for working with charts? You now can give your graph a colorful background.

4. Click on the Graph Gallery button on the far-right side of the button bar. The Graph Gallery dialog box will appear, allowing you to make even more changes to your graph. Change your graph's background color by pulling down the Color Scheme menu.

5. Finally, save your new graph by clicking on the OK button to close the Graph Gallery dialog box, then selecting Save from the File menu.

Final Advice

You can make impressive donut graphs, pie charts, bar charts, or line charts by selecting a group of cells, then making some changes to the standard graph. You even can display your data in more exotic formats. A word of advice first: be careful that your graph conveys information clearly; a graph that requires a person to study it is probably too busy. The goal of presenting data in a graph is to make information more readily understandable. With this goal in mind, try every graph and graph type that suits your eye! You can always go back and change it again. ●

by Robert Mullen

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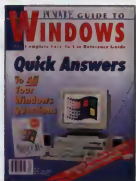
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How To Install A CD-ROM Drive

Internal. External. SCSI. IDE. Double-speed. Triple-speed. These words have no meaning to those who haven't had any contact with CD-ROM (compact disc, read-only memory) drives. But as foreign as these words sound, the lure of games, references, and educational material found only on CD-ROM attracts many computer users. Not to be left out, you've decided to jump on the bandwagon and install your own CD-ROM drive. You've mastered the terminology and can quote in your sleep the advantages and disadvantages of internal and external drives.

Internal CD-ROM drives, which fit into your computer and sit just below the floppy drive, use the computer's power supply instead of requiring their own. They also occupy less desk space and tend to cost less because they are usually IDE, rather than SCSI-controlled. IDE (Integrated Device Electronics) controller electronics are housed on the drive itself, eliminating the need for a separate adapter card. SCSI (Small Computer System Interface) is more expensive because the price of silicon raises the cost of the computer chips in this interface. Most home PCs have Enhanced IDE controllers and would require SCSI (pronounced "scuzzy") host adapters to run a SCSI drive, further increasing the installation price. (For more information on SCSI vs. IDE, see "Hop On The (SCSI) Bus" in the March 1995 PC Novice.)

Even with all the advantages of internal drives, there is one major disadvantage. Internal drives can't be transferred from one machine to another, preventing two computers from sharing one drive. External drives, on the other hand, can be unplugged and moved around without any problems, says Tim Meyerhoff, a Panasonic products specialist for multimedia.

External drives, which sit outside the actual computer, have several other advantages, with the most notable being that they are primarily SCSI. Meyerhoff says external drives rarely

have IDE drives because the data transfer cable connecting the drive to the computer usually doesn't extend more than 18 inches, meaning the CD-ROM drive has to be located fairly close to your computer. SCSI cables, on the other hand, can be up to three meters in length, allowing users to set the drive some distance away from the connected computer. Users do, however, pay a price: external devices demand valuable and already-limited desk space.

For serious CD-ROM users who can afford a more costly setup (SCSI drives cost from \$50 to \$100 more than IDE), Meyerhoff says consumers should invest in a SCSI drive because up to seven peripherals can be connected to one SCSI host adapter while IDE limits users to four. SCSI also has faster data throughput when compared with IDE, but consumers pay for this faster data transfer. Therefore, he says, users "need to weigh cost factors against computing needs" in order to determine which system best suits them.

■ Drive Speeds

Users also must consider drive speed. The speed of the drive determines picture and sound quality and how quickly information is transferred between the disc and the computer. The faster the drive spins, the faster your computer can run programs stored on compact

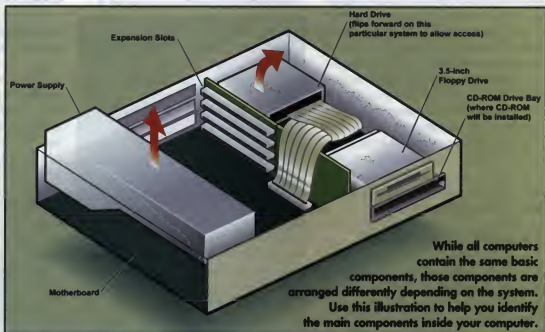
disc. The faster your computer gets the programs, the better the programs will look because the pictures will pop on-screen more quickly and the sound will be less choppy.

A stereo compact disc player spins your audio CDs in single speed. CD-ROM drives don't come in this speed because the discs aren't spun fast enough for the computer to access the information. CD-ROM drives come in double-, triple-, or quad-speed with quad having the fastest spin. Meyerhoff recommends that consumers buy double-speed drives for now because most applications aren't developed specifically for quad speeds.

For best installation results, consumers should buy a multimedia upgrade kit, which comes with a CD-ROM drive, sound card, speakers, and software. Purchasing the kit means you won't have to shop around for each part separately and eliminates the risk of buying incompatible parts.

■ Installation Preparation

Now that you've bought your drive, you're ready to roll . . . almost. *Before you begin the installation, make sure you read the instruction manual that came with the CD-ROM drive to familiarize yourself with the procedure.* While the manual will tell you exactly what tools you'll need for this procedure, a Phillips screwdriver is a necessity. You'll also



need several kilobytes (KB) of free hard drive space (your manual will tell you how much and any other specific requirements). The Panasonic double-speed, enhanced IDE, internal drive we installed required a minimum of 37KB. We installed this drive on a Hewlett Packard Vectra 4/66; therefore, our illustrations of the computer's insides may look different from your computer, as placement of the basic components change with each type of computer. However, the components illustrated are in all computers; you may just have to look a little harder to locate each part.

(Note: Keep your interface board in its static-resistant packaging until you're ready to use it. Static electricity, along with dirt and oil from your hands, can damage the board.)

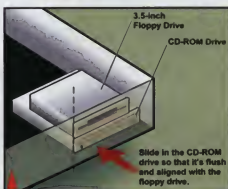
■ Installing The CD-ROM

1. Unplug the monitor and the computer from their power sources, then disconnect the monitor from the computer. Remove the cover from the computer's case, either by taking out the necessary screws along the edge of the case or by unlatching any hooks and sliding the top off. Before handling the computer parts, ground yourself by touching the metal part of the case in order to prevent electrical damage to the computer's circuits. After grounding yourself, don't move around too much to prevent the buildup of static electricity. To do this, make sure all the parts you'll need for the installation are handy and that you have plenty of room on your desk to complete the procedure.



2. Remove the metal plate covering the drive bay where you want to install the drive and take the drive out of its plastic shipping wrap. You will now need to consult your installation manual to see what setting your drive's jumpers should be on. These jumpers are located on the back of your drive and are used to set the ID. Most jumpers are already

set to the proper ID by the manufacturer when you receive the CD-ROM drive, but you may want to double check these settings to prevent any installation mishaps.



3. You're now ready to slide the new drive into the vacant drive bay, making sure the CD-ROM is even with the floppy drive. If your computer has a floppy drive, you may need to take out the screws holding the drive in place and slide the drive forward a couple of inches (*don't disconnect the drive's cables*) to give yourself more room to work inside the computer. If there are any cables in the bay where you want to install your drive, move them out of the way so the drive can slide in.

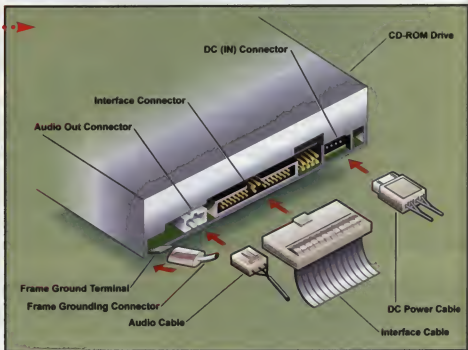
4. After the drive is in place, you will need to hook several cables to it. First, connect the DC power cable to the back of the drive. This cable runs from the computer to the CD-ROM drive

and should be lying just underneath the hard drive. (If the hard drive is in your way, you can loosen the screw that fastens it to the motherboard and pick it up out of your way.) Next, connect the interface and audio cables to the back of the drive. Both of these cables came with our installation kit so don't worry about finding them.

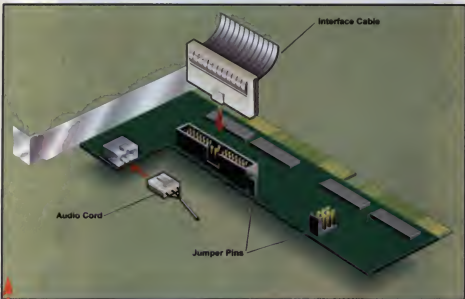
5. Now that you've attached the cables, put the hard drive back in place. Make sure the interface and audio cables run to the other side of the computer but aren't pinched under the hard drive when you put it into place. These cables must run between the CD-ROM and hard drives, not underneath.

6. The installation of the interface board comes next. You'll probably need to locate an empty 16-bit expansion slot, usually found at the back of the computer. (An expansion slot is a socket inside your computer that provides a connection between your machine and the interface board.) To determine if your board needs an 8-bit or 16-bit slot, check the number of connectors on the bottom of the interface board. If the board has two connector areas instead of one, you need a 16-bit slot.

7. Before you can slide the interface board into the empty slot, you must remove the metal plate that covers the opening on the back of the computer. If you find that space is tight when trying to remove the plate's screw,



you can remove the power source located on the right side of your computer (*don't disconnect any cables*). You won't be able to remove the power source completely but should be able to flip it over and lay it on top of the hard drive to get it out of your way. Remove the plate's screw and save it because you will need it to secure your interface board. If you don't have a metal plate corresponding to the slot you have chosen, don't worry. It probably has been removed already for another reason, and you'll just need to find different screws to hold the board in place.



8. Your interface board should still be in its shipping wrap. Before you remove the board, ground yourself to prevent static electricity from damaging the circuits. Once again, you'll need to consult your installation guide to make sure the board's jumpers are set correctly. These jumpers look like little black Legos on gold connector pins. As with the CD-ROM drive, these jumpers should be set by the manufacturer on the correct setting and shouldn't require you to change any.

9. Once you have checked the settings, you're ready to slide the board into the expansion slot. You will need to press firmly to get the board into place. This was the hardest part of the installation because initially we couldn't get the board into the slot. If this happens, push in one side of the board at a time, but don't push too hard. The board should slide in easily once it's in the right

position. If you have to really shove, take the board out and try again.

10. Once the board is in the slot, replace the screw you removed. You shouldn't have to force the screw into place, as the board should stay in position without the screw. The screw simply keeps the board from being bumped out accidentally.

11. Now you'll connect the interface and audio cables to the interface board. You shouldn't have any problem figuring out

where the interface cable connects because there's only one slot on the board resembling the interface cable. The audio cable may be a little more tricky, as there are three different ends on the cable, enabling it to fit into different slots on different boards. However, only one end will fit into the connection on your board, so you just need to determine which is the match. (See the illustration for step 8 for the location of the cable connections.)

(Note: If you were going to install a sound board or already have one, the audio cable would attach to that board and not to the interface board.)

12. Now that you've installed the hardware, you can put the computer's parts back where they belong, tighten loosened screws, and replace the computer case. (If it's a hassle to keep removing the computer case, you may want to leave it off until you make sure the CD-ROM drive works.) When

we installed our CD-ROM drive, we found that the interface cable ran along the top of the hard drive and would be folded when the case was replaced. It's OK for this cable to be bent underneath the cover. When the case is back on, reconnect the monitor to the computer and plug both in. You can now turn on your computer and begin the software installation.

13. The software installation is easy if you follow the directions in your instruction manual. We only got hung up once, when asked if we wanted to install the software to DOS, Windows, or both. The first time we chose Windows Only, but the computer couldn't find the CD-ROM drive with this choice. So we went through the installation process again, this time choosing both DOS and Windows, and voilà, the installation was complete. The device drivers (which are software programs that let the computer communicate with hardware devices) were installed from the provided diskette so, besides answering some basic questions, we didn't have to do anything during this process.

If you've completed the installation and your CD-ROM doesn't work, don't panic. There are several things you can try before running to the phone to call technical support:

- Are all the connections between the interface board, cables, and CD-ROM tight?
- Is the software installed properly?
- Did you put the disc in the drive label side up?
- Are all the settings correct, both on the CD-ROM drive and the interface board?

If you've checked all these things and your drive still doesn't work, call the technical support number listed in your installation manual.

Panasonic's CD-ROM drive was easy to install, and the manual was clearly written. The whole process only took about an hour, as we had no problems that weren't quickly fixed. But don't despair if you can't get your drive to work the first time. Some drives are harder to install than others. Just keep plugging away; the results are definitely worth it. ●

by Juliet Oetka

Special thanks to Celine Wishner and Tim Meyerhoff from Panasonic for their help with this article.

Troubleshooting General Protection Faults

Every month our Q&A column gets letters asking "What is a General Protection Fault (GPF) and how do I get rid of it?" Often we put these on our "We're glad that's not our computer" stack. We balk because they defy quick answers.

Finding a GPF's cause can be arduous. If you lack the patience for trial-and-error investigation, and you're only getting a couple of GPFs a month, consider leaving well enough alone, and save often or get a GPF-reduction utility (we'll discuss this solution later) rather than launch a major investigation for a minor problem.

■ Detective Tools

GPF hunting is serious detective work. If this following computer detective's tool list isn't clear, refresh yourself before accepting the case:

- Learn the names and locations of your computer's configuration files (See "Editing Your Startup Files" Parts I and II in the January and February 1995 issues of *PC Novice*). DOS users should look for the `Autoexec.bat` and `Config.sys` files in the root directory of their hard drives. Windows users need to look for `Win.ini` and `System.ini` in the `WINDOWS` directory. Many Windows programs also have their own `.INI` file in their directories.

- Learn to use a configuration file editing tool (such as MSDOS' `EDIT` command, Windows' `Notepad`, or `Sysedit`).

- Learn how to temporarily rename files (and how to name them back) using either `File Manager` or DOS' `RENAME` command.

- Learn the `MSD` command, the system assessment program found in your DOS or `WINDOWS` directory. It gives invaluable information on your system's configuration. (For more information on this command, type `help msd` at the DOS prompt.)

■ Safety First

Troubleshooting GPFs often involves trial-and-error changes to critical system settings. If you change several at once, you leave yourself no simple way to get back to where



you started. At best you'll get confused, at worst you'll prevent Windows or your computer from starting, with no way back in to "unfix" your failed repair. So here are some tips to help you construct your safety net:

- Do find someone who knows how to edit configuration files if you're not comfortable doing it yourself.

- Do a complete backup before starting repairs. Or, at least try to get critical data files copied onto a floppy diskette or some other external storage device. Before you modify any configuration files, make copies of them on a floppy disk.

- Do make two bootable (system) floppy disks. These often let you start your computer if it locks you out. One should be a bare-bones,

clean-boot floppy diskette, the other should have copies of the files which your computer normally needs to start up.

- Do keep notes of remedies you try. This keeps you from circling around in your own tracks, and helps undo a fix that makes matters worse. If you later call tech support, notes will save time and give ideas for other remedies.

- Don't change more than one thing at a time. For example, if you suspect your `Config.sys` or `Autoexec.bat` are the culprits, make only one change at a time. Otherwise, you may find yourself sinking deeper in the quicksand.

- Do make a copy of a configuration file before making any changes.

• Do disable the network software if your computer is on a network and treat it as a standalone computer while tracing GPFs. If you can't get them to go away while off the network, they certainly won't while the network is connected. Experimenting while network can bring down the whole network.

■ What Is A GPF?

A GPF means that something unexpected—and not good—happened. Windows 3.0 called that something an Unrecoverable Application Error (UAE). In Windows 3.1, GPF is just an alias for UAE. GPFs usually are connected to software, but occasionally hardware (such as bad random-access memory [RAM]) can provoke them. A GPF usually means a program has impolitely attempted to access an area of RAM (not disk space) supposed to be protected against intrusion. This intrusion can interfere with other programs' use of memory. If so, all bets are off and anything weird or terrible can happen. Windows warns you of this intrusion with a GPF message. The message says to save anything you're working on and shut down Windows, but often by the time you see that message the only thing you can do is restart your computer and lose any unsaved work.

A System Integrity Violation originates when an MS-DOS-based program running in Windows violates the rules.

Windows reports that the "application has violated system integrity due to a general protection fault and will be terminated." This kind of GPF often lets Windows itself keep running even though you still don't know what has become unstable.

A GPF message usually tells which program or Windows component was running when your bytes hit the fan. It might say something like "General Protection Fault (GPF) in module WinCim.exe." This means the WinCim program is your prime suspect and you should try fixing, reinstalling, or removing it. Unfortunately, this accused program is sometimes an innocent bystander, and more footwork is needed to find the real suspect. Additionally, instead of pointing its finger at something you recognize as a working program, the message might refer to a device driver (e.g., Vga414.drv) or some file that's part of Windows' own guts (e.g., Kml386.exe).

That still helps decide what, if anything, to reinstall. (A device driver is software that helps your system communicate with the hardware peripherals attached to it.)

■ Life With GPFs

Before tracking down your GPF, know what to do when they surface:

- Do save more often than usual. GPFs like to strike just as you finish work on an unsaved, four-hour project.
- Don't continue working once a GPF strikes. Sometimes Windows seems to recover from a GPF. If so, save everything and exit out of Windows before doing any more work. Things may look normal, but they're not.
- Do try pressing CTRL-ALT-DEL rather than pressing the reset button on your computer or turning it off if a GPF locks the program you're in. You'll



**Don't continue
working once
a GPF strikes.**

lose unsaved work in that program, but you may find other Windows programs still running, so at least you can save in them before closing Windows.

Like Sherlock Holmes, you have "Dr. Watson" to help you. This utility, provided with Windows 3.1, reports on GPFs, but it must be running when the GPF strikes. To start it automatically, either edit your Win.ini file's [BOOT] section to include a line saying LOAD=C:\WINDOWS\DRWATSON.EXE, or make an icon for Dr. Watson and put it in your Startup group.

■ Prime Suspect

Special video drivers for Windows often come with your computer or video card. These

allow more than 16 colors and VGA (Video Graphics Array) resolution higher than 640 x 480. Imperfect drivers are a common cause of GPFs. Two symptoms of this are: (a) Seeing "DRV" as part of your GPF message, and (b) problems when switching between DOS and Windows programs. Find out if your video driver is the most recent version (and update it if it's not) before getting deep into troubleshooting. To find out if you're using a driver other than the standard VGA (or to activate the standard VGA for testing):

1. Open your Main group and start Windows Setup by double-clicking on its icon.
2. If the Display field lists anything other than plain VGA, click Options.
3. In the dialog box that appears, click the Change System Settings button.
4. In the Change System Settings box, click the down arrow on the right of the Display line.
5. Scroll up or down until you find and select the plain VGA driver.

If your GPFs disappear, you either can live with the lower resolution and colors of the standard VGA, try a different driver on the list (such as Super VGA), or hassle the maker of your video card or computer.

■ Cleaning The Slate

If your GPFs happen in one specific program, check that you don't have a very old Windows program (pre-1990) that wasn't designed to run right with Windows 3.x. If that's not your problem, reinstall the program from the original factory disks. If that doesn't work, remove your old copy (see "Cleaning Dirty Windows: How To Uninstall Software" in the July 1994 issue of PC Novice) and reinstall a "clean" program (one that's not corrupted by any previous actions by you or your computer). Finally, try calling the tech support line for that program. Sometimes fine tuning of, for example, a word processor's settings can avoid GPFs.

If your GPFs seem random, your culprit is probably hidden in Windows and general system factors.

Often reinstalling Windows from clean factory disks cleans up GPFs. Reinstalling with the existing copy of Windows preserves most of the old settings, which is normally what you want. But if the problem is coming from the old settings themselves, this reinstallation

doesn't work. In that case, remove Windows itself and then reinstall it. (Caution: This cleans out all your old settings, such as special video drivers, fonts, fax card drivers, and CD-ROM and video cards. These may or may not be automatically re-established after this kind of radical solution.)

Before a total reinstallation of either kind, check some more "basics" (sort of like making sure your TV is plugged in before taking it to the shop):

- Run SCANDISK, CHKDSK, or Norton NDD to see that your hard disk files aren't messed up.

• Check that you've got enough RAM and system resources. In Program Manager, click Help, then About. If system resources are below about 60%, that may be your

problem. There's no absolute lower limit below which we can say for sure the resource shortage causes GPFs, but if you can get your system resources above 70% and GPFs still occur, then this is not the cause of your errors. If resources are low, exiting and restarting Windows should raise the level, as should shutting down extra background running programs.

• The free memory reported on 386 (or higher) computers is often falsely high, because Windows reports both true RAM memory and virtual memory (hard disk space masquerading as RAM) as free memory. To check your real available RAM, start Windows by typing win/s, and then check as explained above. If free memory is less than about 1500 kilobytes (KB) you may have too many open programs or not enough RAM chips. Again, there's no exact level below which a memory shortage causes GPFs, but if you can get your free memory above 2000KB and you still get GPFs, you can be pretty sure they're not related to a memory shortage.

• To see what programs are open, press CTRL-ESC and read your Task List. If things that you never deliberately started are listed, open your Startup group in Program Manager and remove any icons for programs you don't want to start. Also check your "LOAD=" and "RUN=" lines in Win.ini; these entries force automatic startup of background programs such as faxes, screen savers, etc. For example, if you find "run=c:\afterdrk\afterdrk.exe," temporarily deactivate that line by putting a semicolon (;) and a space in front of the word "run."

• Running fewer open windows sometimes reduces GPFs. Do you really need your database open all day?

• Check your version of DOS. While many PCs can run any version of DOS, some can't do so without some trouble. For example, if you have a Compaq, you should run Compaq's version of MS-DOS. To check, type ver at your DOS prompt.

• Is your problem in Win.ini? If it is, rename Win.ini to Win.old. Restart Windows. (You'll probably lose some functionality during this test, such as an inoperable fax, etc.) But if your problem goes away, you know it's in Win.ini. Rename it back, and get help going through it line by line.



Simplify your system by turning off all screen savers.

• Further simplify your system by turning off all screen savers (usually in Control Panel) and ensuring that Windows isn't being started from a menu program.

• Check your Config.sys file. Make sure the "FILES=" line is set to at least 50 and "BUFFERS=" is set between 10 and 15 (20 to 35 if SmartDrive isn't running on your system).

• Do your problems occur with a specific file? Sometimes a file may get corrupted and GPFs could occur when working with that file. Delete the offending file and restore it from your backups.

• Windows and Windows programs need free disk space, not just RAM. Recommendations range between two megabytes (MB) and 10MB. Use a defragmenter (DEFRAG,

Norton's Speedisk, etc.) to organize and compact your free disk space. Highly fragmented files sometimes can provoke GPFs.

• Does your SET TEMP command in your Autocexec.bat file "point to" a valid directory? This command tells Windows where to put temporary scratch files. If your command reads "SET TEMP=C:\TEMP," but in reality there is no directory named TEMP, Windows can behave erratically, especially when printing.

If none of these basic fixes and questions find the offending GPF, and you're not ready to reinstall Windows and all your programs, start looking for clues. This means you'll have to look over your system configuration and make adjustments.

■ Where Were You When . . . ?

Detective work means asking questions. The questions below are ones a tech would ask if you phone for help. In asking and answering them you may be able to detect and correct the problem yourself.

What were you doing when your GPF occurred? Can make your GPF appear on demand? If so, that's good! A GPF invocable at will is easier to isolate than one that just happens. Not only that, but as you try different repairs, you'll be able to tell which help and which don't.

Have you tried "booting clean"?

A clean boot-up means you have only the minimum stuff in your configuration files that you need to run Windows (and there shouldn't be any icons in your Startup group).

Caution: Don't remove things such as disk compression devices like Stacker and SuperStor that your computer needs for accessing its disk.

A sample clean Config.sys file is:

```
DEVICE=C:\WINDOWS\HIMEM.SYS
FILES=50
BUFFERS=30
DOS=HIGH
```

A sample clean Autocexec.bat file might be:

```
PROMPT=$P$G
SET TEMP=C:\DOS
SET PATH=C:\DOS;C:\WINDOWS
```

If you're unsure about a device driver, leave it in. Also turn off font programs such as *Adobe Type Manager*.

Edit the [BOOT] section of your System.ini file to look like this:

```
[BOOT]
SHELL=PROGMAN.EXE
SYSTEM.DRV=SYSTEM.DRV
KEYBOARD.DRV=KEYBOARD.DRV
MOUSE.DRV=MOUSE.DRV
DISPLAY.DRV=VGA.DRV (or another
Windows .DRV file)
```

Regular programs sometimes change the above lines when they install themselves, thereby causing GPFs. For example, if you've installed the font manager you might find something like "Atm.system.drv=System.drv" and "System.drv=Atmsys.drv" instead of the "System.drv=System.drv" line. If disabling one line (by putting a semi-colon and a space in front of it) cures the GPF, contact the program's maker.

Are you using the newest versions of Himem.sys, Smartdrv.exe, and Emm386.exe? Probably you have all three files in your WINDOWS directory—and in your DOS directory—with the newer versions in one directory. Use File Manager to read the file dates. For example, if the versions in your DOS directory are newer than those in your WINDOWS directory, you might need to change the line in Autoexec.bat from "C:\WINDOWS\SMARTDRV" to "C:\DOS\SMARTDRV". And you'd change the line in Config.sys from "DEVICE=C:\WINDOWS\HIMEM.SYS" to "DEVICE=C:\DOS\HIMEM.SYS", etc.

Is your applications software a current version? Developers often issue maintenance updates. Contact your program's developer and ask if an update might fix your problem.

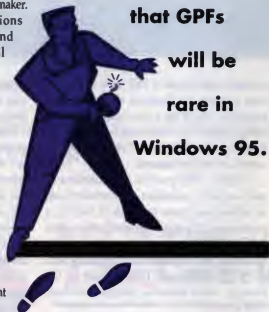
If your GPFs occur when printing, does your printer driver have known problems? Contact Microsoft or your printer's manufacturer to find out. Sometimes an updated printer driver is all you need.

Is your Windows swap file damaged? To test this, change your swap file type (use Control Panel's 386Enhanced icon) to "temporary" and restart your machine.

Do GPFs go away if you start Windows with the command WIN /D:XVSF instead of WIN? If so, try it with one switch (X, V, S, or F) at a time. Each switch disables an advanced Windows function and each suggests a possible "repair" line to add (or change) in the [386enh] section of your System.ini file:

```
If X works, [386enh] should read: emmex-
clude=A000-FFFF
If V works, use VirtualHDIRQ=OFF
If S works, use SystemROMBreakpoint=OFF
If F works, use 32BitDiskAccess=FALSE
```

Microsoft
is promising
that GPFs
will be
rare in
Windows 95.



Or seek expert help on resolving the issue associated with that particular "switch." The EMMEXCLUDE command is a temporary trick and means that you have to look closely at what's in your upper memory. Check for commands in your Config.sys and Autoexec.bat files that put terminate-and-stay resident (TSR) programs and drivers into upper memory, memory issues, etc. If your computer is loading TSRs and device drivers into upper memory areas, these drivers may conflict with your hardware devices (sound cards, etc). To see if you have such things in upper memory, type

mem/c ; more at the DOS prompt and press ENTER. If these things are found in upper memory, try loading one or more into conventional memory (by removing LH or LOADHIGH from the front of the command line). This might reduce or remove the conflicts. (For more information on TSRs, see "Using TSRs in DOS And Windows" in this issue.)

Is your Himem.sys memory test disabled? Newer versions of the HIMEM command in Config.sys are capable of a sensitive test for your RAM to see if it's marginal and might cause GPFs. Sometimes sellers turn the test off if they see HIMEM report errors rather than fix the problem. If you find the words /TESTMEM:OFF in your Config.sys file, it probably means the HIMEM test was disabled, thus masking a hardware problem that may be causing your GPFs. If so, complain. A system failing HIMEM's RAM test may need new RAM SIMMs (single, inline memory modules), new cache memory chips, or even a new motherboard.

■ Other Solutions

If yours is a persistent GPF that eludes cure, consider utility programs offering some GPF relief (see "Windows Safety Software" in the January 1995 issue of *PC Notice*). Many of these products can help prevent, diagnose, or work around GPF problems. None is perfect, but one might be right for you.

Microsoft Personal Operating Systems FastTips (800/936-4200) is an automated service that will fax or mail you a detailed, 12-page GPF troubleshooting guide (request document 0524). Or, on CompuServe type go msl and download a file called Ww0524.exe. Type ww0524 at the DOS A:> prompt (or a:\ww0524 at the DOS C:> prompt) to decompress it into a readable document called Ww0524.txt. If you know how to download files using a modem, you also can call the Microsoft Download Service at (206) 936-6735.

Microsoft is promising that GPFs will be rare in Windows 95. In the meantime, they're unpleasant and difficult to catch. But if you do your detective work systematically, you often can find them and take them out of circulation—or at least arrest enough of them to make your computer a safe place to work and play. ●

by Alexander Censor, M.S.

Using TSRs In DOS And Windows

A terminate-and-stay-resident program, or TSR, is designed to remain in memory so you can pop it up instantly in whatever program you're using. That's why TSRs are also called memory-resident or pop-up programs. The term "terminate-and-stay-resident" refers to loading a program, then terminating its action but not removing it from memory.

TSRs had their heyday during the 1980s when DOS was king. They provided a crude form of multitasking, or task switching, for users of DOS programs. DOS programs are designed to be used alone, but many people prefer the convenience and efficiency of using two or more programs simultaneously, without first having to quit out of one to load another. TSRs provide this capability.

Users of Microsoft Windows don't have to resort to TSRs to use two or more programs simultaneously. Windows is a multitasking environment designed to run more than one program at the same time.

Windows programs are becoming increasingly popular, but many people still use DOS programs primarily or exclusively. And, for Windows users, there are issues surrounding TSRs you should be aware of.

■ Using TSRs

You generally load a TSR through your Autoexec.bat file, a startup file that runs each time you boot your PC. By placing the command that loads the TSR on a line in this file, the TSR will load automatically and be available in whatever other programs you're using.

You pop up a TSR using its hotkey. A hotkey is a key combination, such as CTRL-ALT, that's defined by the particular TSR. You can often change the default hotkey to another combination if it conflicts with your existing application or another TSR.



When you activate a TSR from within another program, it's displayed either as a small window on top of the text or images of the existing program, or it takes up the full screen. When you exit out of the TSR, the previous screen contents are restored.

Typically, TSRs provide such functions as quick access to a calculator, appointment book, or address and phone list. Borland *SideKick*, a predecessor of today's personal information managers (PIMs), was the first commercially successful TSR. Popular utility programs, such as *PC Tools*, include TSRs as part of the package. Some antivirus programs include TSRs as well.

■ Problems With TSRs

DOS was never designed to support the running of more than one program at a time. TSRs bypass this limitation in DOS, but in doing so they can sometimes cause problems of their own. TSRs can conflict with existing programs. Some programs may not even load if a particular TSR is resident in memory. And, if you use more than one TSR, they can conflict with each other, causing your system to become unstable or crash. Fortunately, problems are more likely to occur with older TSRs than with newer ones.

If you experience conflicts, there are two general approaches to diagnosing the problem and finding a solution. The first involves disabling the TSRs one by one, starting with the most likely culprit, until the problem disappears. You can do this by deleting the line that loads the respective TSR from your Autoexec.bat file. Better yet, you can comment it out by placing REM at the beginning of the line. This causes DOS to regard the line as a comment or remark, rather than a command, and it makes it easy for you to restore the command later.

The second approach is to start with a minimal, or clean, Autoexec.bat file and add TSRs one by one until the problem returns. Both approaches can

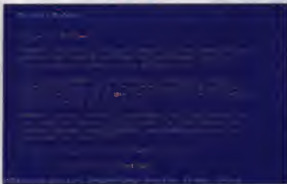
be time consuming, since you have to reboot your PC each time you alter your Autoexec.bat file for the changes to take effect.

Once you discover which TSR is causing problems, look through the documentation to see if there are any troubleshooting tips. Sometimes a change in the TSR's configuration can alleviate problems. If you don't find a solution here, call the company's technical support number. If this doesn't produce a solution, you can experiment with loading your TSRs in a different order. If nothing works, you'll have to do without the problem-causing TSR. There may be another program on the market, though, that provides similar functions.

■ Precious Memory

TSRs also can use up scarce lower memory, leaving too little memory for application programs and causing other problems. Lower memory is the part of conventional memory space between zero and 640 kilobytes (KB), which is the only memory that most DOS programs can use.

DOS was originally designed to run on the Intel 8086 and 8088 microprocessor chips, which can address or manipulate only the first 1024KB (one megabyte [MB]) of RAM (Random-access memory is the temporary



MemMaker helps you move TSRs to upper memory, freeing up more lower memory for application programs.

memory storage area used to load program instructions and store files currently in use). DOS and its applications can use only the lower 640KB of this conventional memory space. The remaining 384KB of conventional memory is used for such things as your system, video, and adapter Basic Input/Output System (BIOS).

No matter how much RAM you have, most DOS programs can't break through this 640KB ceiling. Even though some programs use work-arounds to extend or expand their memory reach, the lower 640KB is valuable territory that should be used wisely. If you have too little lower memory available, some programs simply won't run.

Fortunately, utility programs exist to help you use TSRs without using up excessive lower memory, provided you have a 386SX or DX, 486SX or DX, or Pentium-class PC. These utilities, called memory managers, move TSRs from lower memory to the part of conventional memory between 640KB and 1024KB, which is known as the **Upper Memory Area (UMA)** or simply **upper memory**. Though this expanse of memory is used for other purposes, not all of it is used. The free areas of UMA are called **Upper Memory Blocks (UMB)**.

The most widely used memory manager is EMM386, which is included with its companion program HIMEM in DOS 5.0 and later. You load EMM386 through a line in your Config.sys file, which executes each time you boot your computer. DOS 6.0 makes installing and configuring EMM386 easier with MemMaker. Just type **memmaker** at the DOS prompt, and answer the questions.

Along with EMM386, other popular memory managers include QEMM, 386Max,

and Netroom. Depending on your setup, these programs may free up even more lower memory than EMM386, though they must be purchased separately.

■ Multiple Configurations

Another way to manage TSRs is through a multiple configuration or multiboot utility. These utilities let you choose which programs you want to load through your Autoexec.bat and Config.sys files each time you boot your PC. They also let you create different versions of your Autoexec.bat and Config.sys files and choose which ones you want to use at bootup.

You can create one configuration, for instance, for running a RAM-hungry desktop publishing program, which loads few or no TSRs. You can create another configuration for word processing—where you have some spare lower memory—that includes a number of helpful TSRs.

DOS 6.0 introduced commands you can use in your Autoexec.bat and Config.sys files to have multiple configurations without needing a third-party utility. First, you define a startup menu in your Config.sys file. It might look like this:

```
[menu]
menuitem=Word
menuitem=DTP
```

Second, create a configuration block in your Config.sys file for each configuration, beginning with a block header, such as:

```
[Word]
files=30
buffers=30
```

```
[DTP]
files=30
buffers=30
dos=high
```

Third, insert the lines that direct DOS to carry out different Autoexec.bat commands for each configuration. You do this by first inserting this line in your Autoexec.bat file after any common commands for all configurations:

```
goto %config%
```

Then add labels to your Autoexec.bat file corresponding to the startup menu names in your Config.sys file. Place a colon in front of each label, such as:

```
:Word
```

Underneath each label, place the Autoexec.bat commands you want to execute for that specific configuration. The last line for each configuration should be:

```
goto end
```

The last line of your Autoexec.bat file should read:

```
:end
```

There are many ways to fine-tune DOS's multiconfiguration capabilities. Check your DOS manual for details, or at the DOS prompt type:

```
help multi-config
```

■ Releasing RAM

Still another way to manage TSRs is through a popular freeware collection of tools called **TSR Utilities**. Most TSRs, once loaded into memory, can't be removed unless you reboot your computer. TSR Utilities makes it easy to selectively remove TSRs from RAM, freeing up lower memory for other purposes.

Kim Kokkonen, president of TurboPower Software in Colorado Springs, Colo., makes these tools available to the public for free. TurboPower also creates commercial programmer's toolkits.

You can find TSR Utilities on many local BBSes (bulletin board systems), CompuServe and other commercial online services, Internet FTP sites, shareware distribution houses, and computer users groups. Just look for a file called **Tsrcom.exe**, which is a self-executing compressed file. After obtaining it, type:

```
tsrcom
```

at the DOS prompt. The file will then decompress itself automatically into individual files.

The two most useful files are **Mark** and **Release**. Use **Mark** as a placemaker before



Microsoft Diagnostics offers comprehensive information about memory, TSR usage, and other hardware and software components.

each TSR you may later want to remove from memory. Use Release to release the memory that those TSRs had been using.

You may want to unload a TSR during the course of a computing session. Place this word in front of each line in your Autoexec.bat file that loads the unwanted TSR:

mark

This marks the TSR's current position in memory and stores information that Release will later need to free up memory and restore your system to its previous state.

When you want to release the memory used by a TSR, type this at the DOS prompt:

release

If you load a TSR from the DOS prompt rather than from your Autoexec.bat file, you can use Mark before loading it. This will let you use Release afterward, freeing up the memory the TSR had been using.

If you use multiple TSRs, you can use Mark with each one. Typing release will only release the last TSR you marked. If you marked three TSRs, type release three times to free up the RAM used by all three.

You also can use Mark and Release with TSRs loaded into UMB with a memory manager, such as EMM386 or OEMM.

■ Checking Memory

DOS provides two useful tools that let you check the status of your memory, including the memory the TSRs are using.

The MEM command, which is included with DOS 5.0 and 6.0, can display how much con-

ventional and extended memory you have. To use MEM, at the DOS prompt simply type:

mem

MEM also can display how much memory each of the TSRs currently loaded is using. Use the /c switch to show these details. The command is:

mem /c

The details provided may take up more than one screen, scrolling you to read them. If so, you can use command with both the /c switch switch:

mem /c/v

Microsoft Diagnostics is another utility, provided with DOS 6.0, that displays information about memory usage. To access it, at the DOS prompt type:

msd

In addition to providing a graphical display and details on the memory used by TSRs, Microsoft Diagnostics also provides information about other aspects of your hardware and software setup.

■ Windows

Windows and Windows applications have largely subsumed the role of TSRs. You simply load another Windows program to do the same things you once needed a TSR for. From the start, Windows was designed to run multiple programs. What's more, Windows doesn't suffer from DOS' 640KB lower memory ceiling; it can use all of the memory you have.

Still, even if you're running Windows, you may want to load old TSR favorites. And if you're attached to a network or using certain modems or other external devices, you may still need to run TSRs even if you use only Windows applications.

You can load TSRs through your Autoexec.bat file, as you can with a strictly DOS setup. But you also can load them in three other ways.

First, if you intend to use the TSR with only a particular DOS program run from

Windows, you can load both the DOS program and the TSR from a batch file. A batch file is a file ending, with the extension .BAT that carries out two or more procedures, each from a separate line. Loading a TSR this way means you'll be using memory for it only when using the particular DOS program with which you use the TSR.

Second, if you're running Windows in 386 enhanced mode and will be using the TSR with Windows applications only, you can load the TSR from the batch file `Winstart.bat`. Just create a batch file with this name and place the file in your Windows subdirectory. This technique prevents the TSR from taking memory away from any DOS programs you run. Not all TSRs can be loaded this way; you'll need to check the TSR's documentation.

Third, you can load the TSR as you would any other DOS program from Windows. Set up an item in Program Manager, using a **program information file (PIF)** if necessary. A PIF contains such information as how much memory the program needs and how it uses various system resources.

To load the TSR, double-click on the TSR's icon, then press the hotkey that normally activates the program. If this hotkey conflicts with a key combination that Windows uses, such as ALT-ESC, edit the PIF and select the Reserve Shortcut Key option for that key combination. Once the TSR is loaded successfully, you can switch to and from it, using CTRL-ESC or ALT-TAB, as you would with any other DOS or Windows application.

Just as TSRs can conflict with DOS programs, they also can conflict with Windows. Windows' Setup program, which you use when first installing Windows, checks for the presence of TSRs that are known to conflict with Windows. But it doesn't catch them all.

If you experience general protection faults or other problems when running TSRs under Windows, disable the TSR to see if the problems disappear. If they do, consider upgrading to a Windows program that provides the same functionality. ●

by Reid Goldsborough

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Power Struggle

Portable computers aren't that portable when chained to an outlet by a few feet of electrical cord.

Newer laptops and notebook computers offer capabilities similar to bulky desktop models in a package small enough to tuck in a briefcase. But without power, that portable is a couple thousand dollars of nothing. Liberating though it may be, portable computing also can be frustrating.

Most of today's laptop and notebook computers can run somewhere in the range of three to five hours before exhaustion sets in. That might be enough time for an executive airplane ride, but a long study session in the library is just one of the many instances where your computer will probably give up before you do.

There are a few steps you can take to move yourself farther away from the outlet, says Apple spokeswoman Kristin Brownstone. But freedom has a price.

"It just depends what you're willing to trade off," Brownstone says. For instance, she says, some types of Apple's PowerBooks can carry two batteries at once. Such a configuration doubles the battery life, but also adds an extra pound to the total weight.

The ultimate answer to the portable power dilemma might be really long extension cords. Because such a solution would wreak havoc with the nation's highways and airlines, manufacturers have settled for a somewhat cantankerous Plan B, which in this case stands for Battery.

■ Battery Breakdown

Batteries aren't the perfect answer. They add considerable weight to the computer and seem to constantly require recharging.

In addition to these inherent disadvantages, portable computer batteries also come in all shapes and sizes, much to the annoyance of



computer users. You just can't run to the nearest grocery store and pick up a few flashlight batteries to drop into your portable if you want extra power. Instead, you'll have to find a computer store or mail-order catalog that deals with your particular type of computer. Once you find the battery you need, you'll probably need to shell out more than \$100 to make it yours.

The age of your computer is the prime factor in determining what type of battery you're using. Most older portables use the nickel-cadmium (NiCad) variety. Newer models often feed off of a nickel metal-hydride (NiMH) or lithium-ion battery.

NiCad batteries are familiar friends in the rechargeable world, having been around for some time. They pre-date portable

computers and have been powering cordless phones and other devices for years. NiCads recharge relatively quickly and don't mind overcharging. However, along with being heavier than their NiMH cousins, the NiCads have one strange drawback. If NiCads aren't discharged completely between recharges, they slowly lose their ability to charge back up to their rated time. For instance, if you repeatedly use your computer for an hour each day and then recharge the battery at night, over time what might have been a three-hour battery will become a one-hour battery. This is called the NiCad "memory effect."

Since NiCad users must completely use up battery power before recharging, an extra battery can be vital for people who use their portables for important projects. If your battery is only half-charged, you will have to use it up and recharge it again to attain the full charge.

For these reasons, nearly all portable computers sold today use a different battery type. The

most popular is the NiMH. While retaining the quick recharge capabilities of the NiCad, NiMH batteries weigh less and are less prone to the memory effect. Battery advertisements may claim that NiMH batteries are immune to the memory effect, but many industry experts still suggest fully discharging the batteries. NiMH batteries sold in the latest computers last just as long as their NiCad ancestors.

Today's lithium-ion batteries are expensive and require different charging systems than NiCad and NiMH batteries. But as manufacturers and scientists play around with lithium-ion batteries over the next year or so, they will probably come down in price and offer greatly enhanced battery life. For now, though, most folks are stuck with NiCads or NiMHs.

■ Fighting Back

Despite the weak link of the battery, computer and software makers have come up with some ingenious ways of squeezing the most time possible out of your portable.

Nearly all portable computers have some type of "sleep" mode, which activates when the computer has been idle for a set amount of time. This low-power mode lessens the drain on the battery by dimming the screen or blanking it altogether. Often the hard drive also will shut down. The computer appears to be off, but returns to life at the touch of a key.

A new feature on some portables is another type of sleep, often called something like "resume" or "auto-resume." Rather than napping, the computer makes a record of its memory on the hard drive and then shuts down entirely. It doesn't simply seem to be off—it actually is. When you are ready to begin work again, the computer reloads the memory from the drive and brings you back to the exact place you stopped. This takes more time than waking up from a sleep mode, but saves more power.

Many portables come with a combination of these features, allowing you to set your portable to "sleep" after a short amount of idleness and "resume" after longer periods. These features can significantly extend battery life, but only if you have breaks between computer tasks. If you have a lot of typing or other work to do that keeps your computer from being idle, sleep won't do you any good.

■ Last Resort

A few portables and some software publishers offer another way to save energy even as you type, but at the expense of computer performance. *Power To Go*, a software package designed by Claris Corp. for the Apple PowerBook, allows the user to move a slider bar to choose between maximum battery life and maximum processor speed. In other words, slowing down your computer's brains can make your battery live longer. Similar programs are available for IBM-compatible portables. Computer owners quickly get used to today's rapid processors, however, and enforcing a speed limit on your computer may prove too much of a burden. If you're just planning to do a little typing, a slower computer probably won't have much effect on your productivity. Complicated spreadsheets, graphics, or repeated task-switching between applications would

all suffer from reduced processor speed to a greater degree than most road warriors would accept.

Battery-saving software packages still can be handy if your portable didn't come with built-in power options. A variety of sleep modes, hard drive shut-down commands, and screen dimmers will help older portables curb their battery appetite. A few programs even eliminate the NiCad memory effect by ensuring that your battery is completely discharged before removal.

■ Pushing The Envelope

Some portable users seem to have no trouble completely discharging a battery even without such software. Time slips by until fingers grow frantic at the computer's dire warning of low power. For those who consider battery life to be the Prime Directive of computing, there are ways to make sure you're getting the absolute most time your battery can manage:

- If you're buying a computer, study the power-saving features such as sleep and resume available on different models. Color screens can eat up more power than monochrome. Consider how long each brand's battery is rated to last, how many hours it takes to recharge, and how much it would cost to buy a spare. Some models are able to accept more than one battery at a time.
- Use alternate energy sources whenever possible. If you are near an AC outlet, plug in your computer and save the battery for later.

If you're inside a building, search for hidden outlets in waiting or studying areas. When traveling by car, use a cigarette-lighter adapter. If your computer didn't come with an adapter, it can probably be ordered from the manufacturer.

- Learn to love your built-in or add-on battery-saving software. Set the sleep modes to come on after the shortest delays possible. If you're really into battery conservation, and you have the option, turn down your processing speed.

- One of the biggest energy hogs on a portable computer is the hard drive. Try to limit your use of the hard drive by opening programs less frequently or saving work less often. Some computers allow you to "spin down" the hard drive between uses, which saves power but causes short delays. Avoid using the floppy drive as well.

- In the same company as the hard drive is the power-hungry display screen. If you don't have a sleep mode, dim your screen completely down whenever you're not using it. When you're working, you might try setting the dimness as low as you can manage without sacrificing usability.

- Take care of your battery. If you're using a NiCad, be careful to run it down completely between charges. Batteries generally don't like extreme conditions and can be damaged by very cold or very hot temperatures, so don't leave your computer behind somewhere you wouldn't leave your dog.

■ More Power to You

Future portables will undoubtedly be more energy-efficient and use new technologies for power. Solar panels and batteries with exotic names such as lithium-polymer and zinc-air are undergoing testing that might lead to smaller, lighter, and longer-lasting power supplies for the next generation of portable computers. As is the trend in other areas of computing, portable batteries probably will become more standardized, making them cheaper and easier to buy.

The perfect computer would run for years off a AAA battery from the Gas 'N' Eat, but such a device isn't likely to come along anytime soon. No matter what developments do arise, computer users will surely demand even more as they stretch their portables farther and farther away from that outlet. ●

by Alan Phelps

**One of the biggest
energy hogs
on a portable
computer is
the hard drive.**



Senior Citizens Go Cybersurfing

Move over, Sonny—older Americans are surfing the online ocean like never before.

Once a bastion of college kids and professionals, commercial online services and the Internet are increasingly becoming the virtual hangouts of people who predate pocket calculators.

For senior citizens, especially those who can't get around as well as they used to, an online connection opens a whole new world on top of a desk. Cheaper than the phone and faster than mail, communication by computer is a way to keep in touch with loved ones and meet new friends along the way.

Polly Black, a 65-year-old Southern California America Online (AOL) user, says she even took a laptop with her during a recent hospital stay to keep up with her E-pals.

"That's how important it is to us," she says. "God forbid if we should miss out on something."

Black isn't alone in her convictions. Seniors from all walks of life and all corners of the country are getting wired. As with any Internet fact, the exact number of retired or semiretired users is hard to come by, but no one disputes the trend exists.

"Over the years, the percentage of seniors has increased," says Mike Darcy, a spokesman for Prodigy. Today, 18% of Prodigy's 2.3 million users—about 400,000 people—are 55 or older, he says.

Toni Morris, a CompuServe spokeswoman, says she regularly demonstrates CompuServe to enthused seniors.

"One of their main concerns is they're afraid to use computers and online services," she says. "But once they learn about them, the more interested they are."

■ Senior Hotspots

Both Darcy and Morris say one of the biggest draws for seniors is electronic mail (E-mail). Grandchildren who once seemed a thousand miles away are brought to within a mouse click. Daily events thought too trivial for letters or long-distance calls are easy to relate over the computer.

The major commercial online services also offer special areas where senior citizens can

meet each other and discuss common issues. For example, the American Association of Retired Persons (AARP) operates departments on Prodigy and AOL that are full of bulletin boards and real-time chat rooms.

Morris says CompuServe's Retirement and Living forum is a popular place for retired folks to swap ideas about health, eating, and exercise. Other hits with the older crowd, she says, are the genealogy and travel forums.

On AOL, users can visit what is probably the most active senior meeting room of them all, SeniorNet. AOL does not charge connect time for members of SeniorNet in the SeniorNet area, allowing people there to talk as long as they want despite often-limited budgets.

The online version of SeniorNet is an offshoot of a nationwide non-profit organization that runs 70 volunteer-staffed computer training centers for senior citizens. Many online SeniorNetters started at one of these training centers, where they learned about word processing or other basic skills. Others wandered in from AOL, many times trying it at the insistence of relatives craving E-mail from Grandma or Grandpa.

Black says she was introduced to computers by her son, who heard about SeniorNet and thought his mom should try it.

"I said, 'No way am I going to touch it,'" Black says. "He said, 'Let's try.'"

That was three and a half years ago. Now Black, who likes to keep tabs on SeniorNet, carries a laptop everywhere she goes. As one of the first people to explore





SeniorNet online, Black helped make the area what it is today.

■ Online Family

The first time Black signed on, SeniorNet was home to only about 20 online. Despite its size, or perhaps because of it, she says the small group quickly became a family.

"That sounds funny, but it was like we had known each other all our lives," she says. "You share each others' problems. If you have a problem, they're there for you."

One problem the seniors shared was fatigue. For the first two years of operation, members could only sign on to SeniorNet at night.

"Consequently, we got very little sleep," Black says.

Since those early days, Black has watched SeniorNet Online grow to more than 2,500 regular members who don't limit themselves to cyberspace friendships. Black estimates she has met about 400 SeniorNetters face-to-face at what she calls "bashes."

Black says she started the first of what were to become the bashes when she invited a computer friend from Northern California to stop at her house as he was driving to Los Angeles. She says other online called her crazy for bringing a stranger into the house, but the idea caught on. The last bash Black attended, hosted last November by some Las Vegas SeniorNet members, drew 72 people from across the country.

Hundreds of seniors see the faces behind the screen names at these regional and national events every year. Black says she plans on having 40 people stay at her house soon.

"Now people fly in from all over," Black says. "They think nothing of that when they are going to get to meet these people."

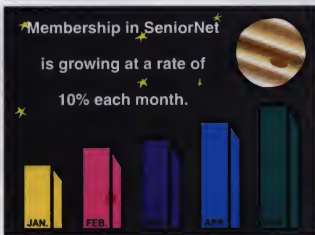
Besides being the first basher, Black is also famous online for her role in the aftermath of the 1994 Los Angeles-area earthquake. She says her house was in the middle of the tremor, which worried a lot of her SeniorNet friends.

"Within a couple of hours, I had 178 messages online wanting to know if I was all right," she says. Soon, E-mail began arriving asking her what she knew about family members of other SeniorNetters. Black says she spent a lot of time driving in her car making

sure the friends and family members of her E-pals were OK.

"There was quite a [few] write-ups in the paper about that," she says.

Black also fed Marines stationed nearby who were brought in to help distribute bottled water to earthquake victims. After one online friend in San Francisco posted a SeniorNet



message about Black feeding doughnuts and coffee to the Marines, nearly \$1,000 poured in from around the country to help foot the bill. Black also invited the Marines to communicate to their families on her computer.

"They thought it was great," she says. "It was quite an experience. It is an extremely small world."

■ To The Rescue

In such a close-knit community, members often can help each other despite the real-world distance between modems. Black says SeniorNet saved a Colorado man she once met at a bash in Reno, Nev.

Black says she was in the SeniorNet chat room with the man and several others when he told the group he was having trouble breathing. The other members told him to hang up the phone his computer was using and call for help, but he wouldn't sign off.

"Then he started typing funny," Black says, "and a lady in Washington called the Colorado Springs police, who came and rescued him."

Black says she later heard officials say the man would have died if the SeniorNet members had not acted. The East Coast was the scene of a similar emergency, Black says, proof of the genuine concern and closeness on SeniorNet.

"If someone gets on who says they are unhappy or aren't feeling well, everyone's attention is for that person, and what we can do," Black says. "And that's what makes it really great."

Susan Pleas, a 54-year-old Seattle-area AOL member, has her own list of reasons for spending time online. A medical condition that makes it difficult for her to sit or stand keeps her at home much of the time, but through her computer she can communicate with dozens of friends hundreds of miles away.

"In my instance and for others [who] may be homebound, I think it opens a whole new world," she says. "There's always someone to talk with in a chat room or E-mail."

Pleas says she keeps in regular contact with about 200 people through E-mail and message boards. Some live merely across town, others in different time zones. Pleas also can use E-mail to communicate with her mother, who has trouble speaking on the phone.

"Some days I have quite a bit of E-mail, and I have to answer a lot of E-mail," she says. "But that's good."

Pleas began using AOL and SeniorNet after learning a little about computers at a SeniorNet training center. By November 1993, she had bought her own Macintosh. She now spends 15 to 20 hours a month online.

"I keep exploring new places," she says. Some of her favorite areas are medical forums, craft and hobby departments, and travel information. Lately, Pleas has begun to learn a little about the Internet itself.

"I'd give up a lot of things before I'd give up my AOL," she says.

■ Virtual Village

Frankie Kangas, vice president of operations at SeniorNet, says members like Pleas and Black are just a couple of the many senior citizens finding a welcome home in cyberspace. Membership in SeniorNet, he says, is growing at a rate of 10% each month.

"They've got the time," Kangas says. "They don't like hearing all this stuff and not knowing what it is about."

SeniorNet's busy chat room on AOL is a place to meet some of these seniors day or night. Users there greet every arrival and are especially interested in newcomers. Kangas



says some users, such as the homebound or sick, may spend hours there each day.

Besides the chat room, Kangas says, some of the most-used areas of the SeniorNet forum are the bulletin boards, where users can relate their wisdom and experiences to a younger crowd. In one message folder, called "Generation to Generation," SeniorNet members field questions from children about the old days. World War II is one popular conversation topic, allowing children to read eyewitness accounts of events straight out of their history books.

In other areas of the bulletin board, members share with each other their knowledge of computers, medicine, or whatever threads arise, from poetry to bashes. The board picks up hundreds of new posts each day, often including a slew of congratulatory notes or warm regards to those who related some accomplishment or shared a piece of good news.

Black says the civilized and friendly nature of SeniorNet even attracts some non-senior citizens from time to time.

"They like the idea [that] we carry on conversations," she says.

Black stays away from other sections of AOL. She says she once tried an AOL chat area and never went back.

"The language knocked me out," she says.

■ Jumping The Hurdle

While many seniors are beginning to dive into the online world and leave their mark in this new medium, communication by computer is still a mystery to the majority of older people. For someone who never encountered computers either on the job or in school, that first step toward the Information Age can seem long indeed.

Volunteer training centers, such as those staffed by SeniorNet, are the answer in some locations, but not for those who don't live in big cities or can't get around very well. Black says she checked into computer classes in her area because there were no SeniorNet centers nearby. But the fees were too steep for her Social Security-based income to manage.

Luckily, Black says, she had family members to turn to for computer help.

Pleas also cited the lack of classes geared toward older people as a major problem.

"The senior centers are so few and far between," she says. Even though Pleas lives near a center, her medical condition made going to class difficult. For those who can't make it to class at all, self-instruction manuals may be the only answer. But those shelves of thick, heavy books can be intimidating, Pleas says.

"That's really hard," she says. "They don't want to open that book. Maybe it's the fear of the unknown."

Even Black, familiar as she is with computers, can relate to the fears some seniors have.

"There are even times when I get afraid to try something new," she says.

That's no surprise to Stuart Grover. The 71-year-old resident of Lincoln, Mass., runs a volunteer computer training center for seniors in the Boston suburbs. He's studied the fear of computers among seniors and knows the symptoms: everything from sweaty palms to paranoia.

Seniors want to join the computer revolution.



"They assume you have to be a technical expert to use one," Grover says. "They feel they're inadequate. They universally consider themselves dummies."

Grover, who says he loves to do "light-hearted research" online, is working on a book about how computers can improve the lives of his fellow senior citizens. He began his free classes a year and a half ago with help from

other Boston-area computer users. Starting with two teachers and four students, the program has grown to 13 teachers and 50 students. Grover says some older people may learn computers slower than their grandchildren, but they're more patient.

Thanks to help from the local city government, Grover's program was able to acquire some modems and is gearing up to begin offering instruction for online services. Seniors want to join the computer revolution, Grover says, and he hopes his efforts can help clear the misconceptions that keep them away.

"There's a lot of misinformation and fear preventing older people from getting involved," he says. "A personal computer in an older person's home can do so much for that person."

Black would probably be one of the first to agree.

"It's not as scary as it sounds if they'd just give it a try," she says. "It's such an open, new world out there."

Pleas doesn't let initial reluctance keep her from convincing friends to take the online plunge. She says it doesn't take her long to win someone over once they see what she can do on her computer.

"We didn't grow up with computers," she says. "It's something they just have to learn. But once they get on them, they really like them."

As a part-time volunteer instructor herself, Pleas says she gives a lot of advice to seniors struggling with computer quandaries. Among her recommendations: Try to locate classes or search for an easy-to-use book.

"Just do it!" she says. "There's a world of information out there. You just have to have an open mind." ●

by Alan Phelps

For More Information:

SeniorNet
390 Arguello Blvd.
San Francisco, CA 94118
(415) 750-5030

Caring for Your CDs

Your great-great-grandchild's "show-and-tell" exhibit at school, circa 2095, might star the compact disc you just bought. That's right—today's CDs are designed to last 100 years. If you properly care for them, your great-great-grandchildren should be able to pull together a full-fledged demonstration of the by-then-prehistoric CD data storage system. (That ought to make you buy a CD from that off-the-wall rock band.) Beyond leaving your music and software legacy, the best reason to care for your CDs is eminently practical: You'll ensure the data they contain becomes irrelevant long before it becomes inaccessible.

CDs, for the computer as well as the stereo, are the most durable data storage mechanisms yet invented, but they're far from indestructible. Playing them causes virtually no wear, but they have plenty of enemies, such as direct sunlight, heat, moisture, rough handling, deep scratches, and solvents. Routine use isn't likely to cause any damage, though.

Disc Structure

To understand some of the care concerns, it helps to understand the CD manufacturing process. We'll give you a brief overview. (For more information, see "Inside CD-ROM: How CD-ROM Technology Works" in the December 1994 issue of *PC Novice*.)

Manufacturers mold the core of each disc from polycarbonate plastic, also used for bulletproof windows. Layers of nonreflective and reflective metal are next, which hold the data. Indentations, called **pits**, and the raised spaces between them, called **lands**, form a binary data system like the digital 0s and 1s used by other types of data storage. Laser light from the CD-ROM drive reflects from the lands and diffuses from the pits. The drive then reads the patterns of reflections and diffusions, and translates the data into an electrical form the computer can use. (**CD-ROM**, or **compact disc, read-only memory**, is a form of data storage using laser optics rather than magnetic means.)

Manufacturers use aluminum for mass-produced discs (quantities of 100 or more) and gold or metal alloys for recordable discs (usually found in quantities of less than 100). On top of the metal layers, manufacturers add a sealer to protect the metal from damage. They then screen the disc's label directly on top of the protective layer.

Disc Enemies

Despite the protective coating, light scratches or prolonged exposure to sunlight can damage CDs. Because some layers of the disc are very thin, even a seemingly inconsequential scratch can damage data. Surprisingly, the portion of the disc containing the label is

the CD's most vulnerable area because this is where the layers are the thinnest. Even a pencil lead can penetrate the label, sealer, and metal to damage the data stored on the disc. The back, or "read," side of the CD is much thicker. Even though it's also vulnerable, small scratches here usually are so far out of focus that they don't cause any problems.

Prolonged exposure to sunlight causes two types of damage: warping and, on recordable CDs, fading. Although they are significantly stronger than the old LP records, all CDs can warp. Fading can be a problem for writeable discs—the type some businesses use to store archival data or to make photo CDs.

"The dye portion of the disc (the layer above the polycarbonate substrate) is melted and decomposed," says Rich D'Ambrise, senior media engineer for Maxell Corp. of America. "The substrate is heated by the dye decomposition and forms a bump (a land)."

Letting this type of disc sit in the sunlight will cause, after about four years, the dye to fade and make the CD worthless for both reading and writing data. The solution, of course, is to keep the disc in its product case or in a **caddy** (a case used with certain types of CD-ROM drives). You should store CDs between minus-20 and 50 degrees Celsius (minus-4 to 122 degrees Fahrenheit) and in 5% to 90% humidity. The interior



of a car can easily reach 122 degrees Fahrenheit on a warm, sunny day.

Labeling the CDs also can harm them. According to 3M (a leading CD manufacturer), an adhesive label may react with the disc, but removing the label also can damage the information layer of the disc by allowing contaminants to penetrate the protective coating. Scratches on the CD from dust are rare, but dust can harm the CD-ROM drive. Fingerprints may impair the drive's ability to read the data by distorting the reflected light.

Cleaning

3M recommends cleaning the disc with a soft, lint-free cloth, wiping in a straight line from the center hole to the outer edge. You shouldn't wipe the disc in a circular motion. Never use chemical cleaners or abrasive cleaners because they damage the disc by eating through the protective coating.

Avoid contact between water and your CDs, too. If the disc is especially dirty—if, for example, it sat unprotected on top of your bookshelf for a year or two—and water seems necessary to remove the grime, use isopropyl alcohol instead. Wet a lint-free cloth with the alcohol and rub in a straight line from the center to the edge. Alcohol evaporates more quickly than water and is less likely to penetrate the protective coating.

The simplest strategy to proper care of CDs, however, is to avoid getting them dirty in the first place. Always handle discs by the outer edge to prevent fingerprints and smears and keep all CDs in their cases or caddies when not in use.

For the best protection, keep your discs in caddies (so there's no need to touch them) and use a

caddy-type CD-ROM drive. That type of drive offers the best protection for the discs because it can eliminate fingerprints and minimize dust, as well as minimize any damage that may occur during loading. For example, if you don't insert the CD properly, a tray loader can jam, which may scratch the disc. Disc jams are virtually unheard of with a caddy CD-ROM drive.

Disc Types

There are two types of CDs, read-only (or CD-ROM) and read/write (or recordable). Public and business users use recordable discs when making quantities of less than 100 discs. They're used for specific applications, too, such as data archives at corporations, universities, or government institutions. These discs contain either pure gold or a gold alloy (hence their golden color). They are more vulnerable to damage than CD-ROM discs, but they are a higher quality disc.

CD-ROMs are the most common type of disc. Manufacturers place information on them prior to sale, like Microsoft's *Encarta* or the latest music CD. The user can't edit the disc's data. Both types of discs are made with the same general technology. You can care for them identically.

This also is true for photo CDs. Kodak's Photo CDs and writable CDs use gold because it's unaffected by moisture, oxygen, or solvents. Kodak recently upgraded its production methods to make exceptionally durable discs. Its laser-sensitive dye also is extremely stable, even when exposed to extreme light, heat, and humidity. For example, the protective coating on the discs can withstand twice the force needed to damage conventional CDs and up to five times the damage that would cause data

loss on some recordable CDs. Kodak also has a new surface design that resists fingerprints, so the disc always looks like new.

Not All Discs Are Equal

Kodak, along with 3M and Maxell, is a high-end disc manufacturer. Recent tests conducted by 3M found some surprising differences among discs from a wide range of manufacturers. For example, when stored at 140 degrees Fahrenheit and 85% humidity, some discs were unplayable after only 100 hours, while others lasted as long as

3,000 hours with minimal damage. Materials used in manufacturing the discs are responsible for the differences in life span. For example, a breach in the protective sealer coat can allow moisture to corrode the metal layer of the disc, causing improper reading of pits and lands. Impurities in the materials also can cause corrosion.

To check the quality of your discs, look at the metal layer on the underside, either briefly under a projector or bright sunlight. A high-quality disc should be opaque. A large number of pinholes (which will look like stars) or any transparency indicate a poorly made disc. Likewise, dimples in the surface will allow outside agents, such as moisture or dust, to attack the metal. Check the sealer coat—it should extend past the outside edges of the metal to the very edge of the disc to ensure a good seal.

If you store your discs at 86 degrees Fahrenheit and 90% humidity—relatively harsh conditions—3M, Maxell, and Kodak estimate a CD should be playable for at least 100 years. You'll probably expose your discs to less severe conditions—room temperature and normal room humidity—and they probably will last even longer.

Of course, the actual lifetime of a disc depends upon its use and storage. The disc that sat on your windowsill all summer and did occasional duty as a coaster for your coffee cup probably won't function well (if at all) in 2095, but it has a better chance of operating with fewer errors than the disc the puppy chewed. The disc that spent its life in its jewel case and in the CD-ROM drive, however, should play beautifully. ●

by Gail Dutton

CD Handling Tips



- 
 Handle CDs only by their edges to prevent fingerprinting
- 
 Store discs in their cases to avoid scratches
- 
 Protect the discs from prolonged exposure to sunlight, heat, and moisture
- 
 Clean CDs with a soft, dry cloth, wiping the disc in a straight line from the center hole to the outer edge
- 
 Never use solvents or abrasives on the CDs
- 
 Never stick adhesive labels on the discs



Need some help with your hardware or software?

Looking for simple explanations on technical subjects?

Send us your questions!



Operating Systems

Q: Please detail how I can make a backup of both a program, and then of a (spreadsheet) file. The program is called First and is in a directory called C:\FIRST. The file's name is "5.SS". I have a 5.25-inch and a 3.5-inch floppy drive. Also, as changes are made, can I use the same diskette over and over again to show changes?

A: There are two kinds of backups. One kind of backup consists of ordinary files, and is done with ordinary copying tools and commands (such as File Manager's COPY command, DOS' COPY command, or the SAVE command in an application). These are better called "file copies" than "backups." The other kind are "true" backups made with special backup programs onto floppy diskettes or tapes, and can only be "restored" back into your computer with a backup program. Though a true backup takes more understanding to execute, it has advantages: It takes less disk space because it compresses files, is less likely to go bad in storage, and is quicker for large jobs. Most importantly, it's the only way to make a backup of your entire hard disk that preserves and protects your entire disk layout; that kind of true backup would give you a decent chance to restore your computer to running condition after a disk failure without days of expert assistance. But both methods have uses.

To make a file copy of your spreadsheet file, a simple way is to put a blank, formatted floppy disk in your A: drive. Open your spreadsheet in the spreadsheet program and activate its Save As command (found in the File menu); when asked what name to save the file under, type a: in front of your file's name; for example, a:5.ss. This tells your program to save a copy of that spreadsheet to the floppy disk in your A: drive. This works in word processors, too. (By the way: We suggest choosing longer file names; guessing what's inside a file is easier a year later if it's named "Services" than if it's named "S"). Another way is to type copy c:\first\5.ss a: at the DOS prompt and press ENTER. Or use Windows' File Manager to "drag and drop" your spreadsheet file from its directory "onto" the floppy drive icon at the top of the File Manager screen.

To make file copies of your whole program, get a stack of blank, formatted floppy diskettes, get to a DOS prompt, and type these commands in the following order (after each command press ENTER):

```
cd \
cd first
attrib -a *.*
```

This "marks" all the files in your \FIRST directory with the "backup attribute." This tells any command that you use later that these files haven't been backed up yet. This is needed for our next command to

work right (for more information about the ATTRIB command, type help attrib at a DOS prompt). Then type:

```
xcopy c:\first\*. * a:.* /s/m
```

and press ENTER. If your program won't fit onto your first floppy disk (it probably won't), you'd see many files copied, then the "Insufficient disk space" message. Don't panic. Remove the first floppy, insert another, and retype the above XCOPY command. The XCOPY routine picks up where it left off. Keep swapping floppy diskettes until you don't get an "Insufficient space" message.

You also can accomplish this by using the backup program that comes with DOS (this will perform the "true" backup we discussed earlier). In DOS 5.0 or newer, the program is called MSBACKUP. To learn more about it see the "DOS Command Dictionary" in the September 1994 issue of PC Novice, type msbackup at the DOS prompt and press the F1 key, or study MSBACKUP in the DOS manual. Many people, even experts, don't make true backups, and inevitably regret it.

Q: Sometimes when I double-click on a file name in File Manager to run it, I get the following message: "There is no application associated with this file." Yet plain as day, over on the left-hand side of the File Manager screen, I can see the program that's meant for running that file. What's going on?

A: That Windows message has a very particular technical meaning when it uses the word "associated." It isn't saying that there's no program on your computer capable of opening up and working with the particular file you clicked. It is saying that if there is such a program, Windows hasn't been officially notified to use that program to run/open files of the type you clicked. For example, files ending with .WRI are normally opened and used by ("associated with") the Windows Write program (found in the Program Manager's Accessories group). If you double-click on a file ending with .WRI, File Manager knows to start running Write and open that file into Write. Files ending with .SAM are normally documents from AmiPro, etc. Such official associations are normally set up for Windows when a program first installs itself. But sometimes the association has to be set up manually. If you read the fine print in your message, you'd see a second line that says "— Choose 'Associate' from the File menu to create an association." Do that while the file type for which you want to create an association is highlighted in File Manager. Then the Associate dialog box will appear. The extension (the three characters after the dot in a file name, for example, .FXD) appears in a box labeled "Files with extension." Just below is a blank box labeled "Associate with." In that box you'd type the exact name and location for the program you want "associated" with that file type; in this case, c:\winfax\wview.exe.

Operating Systems (cont.)

Two catches: Some file types simply aren't associated with any program in the sense that they could be "run" or "loaded" by a program. For example, it makes no sense to create an association for files ending with .DRV because they're never loaded into and worked on by regular programs. So there's no way to use them by double-clicking them. Another catch is that sometimes one file type might be opened and run by several different programs; yet Windows only allows one program to associate with any one file type (it doesn't allow two programs to "claim ownership" of one file type.) For example: Many systems have files ending with .DBF extensions. These extensions are created by such programs as dBASE, WinFAX, PC-File, and ACT!. Yet as far as File Manager is concerned, .DBF is associated with dBASE. If you double-clicked a .DBF file, it usually tries to open it into dBASE—regardless of whether it makes sense.

Q: When I use Wealthbuilder by Money Magazine, it reaches a certain point in the program, crashes, and returns me to Program Manager. Just before it crashes—if I'm quick enough to hit the PAUSE key—I see the message "Run-time error M6111: Math-floating-point error: stack underflow." All the program's manufacturer can tell me is that the program is corrupted. Can you tell me what that means and what to do?

A: Your fast keyboarding to catch the error message was a good idea, but this time it's not a very useful message—the whole Microsoft Knowledge Base doesn't have a single reference to stack underflow. There are several options to try:

- 1) Since the error happens in only one program and only at the specific point, we're inclined to agree with Wealthbuilder's tech support that your program is corrupted. If you have a full backup of your system from a day when the program didn't misbehave, restore it with DOS' RESTORE command (see your manual for assistance with restoring). If you don't have a backup copy, reinstall Wealthbuilder from its factory disks.

- 2) If you still have problems, try completely reinstalling Windows.

- 3) Try adding the line "SET NOB7=NOMATH" to your Autoexec.bat file. This line will disable the use of the math coprocessor for floating-point calculations. If the problem disappears, it means your math coprocessor is involved.

- 4) If none of these options help, look at your Autoexec.bat and Config.sys files (see "Editing Your Startup Files," Parts I and II in the January and February 1995 issues of PC *Notice*) and try to narrow the problem down to a misbehaving device driver. (Device drivers are the software that let your computer communicate with the hardware devices connected to it.) For testing you need to "clean boot" your system (meaning that you must deactivate all unessential commands in your startup files). Here's what's needed for a Windows 3.1 clean boot:

In Config.sys:

```
FILES=45
BUFFERS=20
DEVICE=C:\DOS\HIMEM.SYS
STACKS=9,256
SHELL=C:\DOS\COMMAND.COM /E:1024/P
```

In Autoexec.bat:

```
PROMPT SP$G
PATH=C:\WINDOWS\C:\DOS\C:
SET TEMP=C:\valid path>
```

The string "<valid path>" is where you need to put the name of a directory to which temporary files can be stored (usually, but not always, C:\WINDOWS\TEMP).

Rather than deleting other unessential lines, put DOS' REM command and a space in front of each:

```
rem DEVICE=FXDRV.SYS
```

The REM command deactivates a line in a startup file without deleting it. Changes in your startup files can keep your system from starting. Before changing, make a system disk (which includes all your necessary startup files) by putting a diskette into your A: drive, and typing **sys a:** at your C> prompt.

The following startup commands *should not* be removed or "REM-ed out" because they make the hard drive accessible:

Sqy55.sys	Sstbio.sys	Sstdrive.sys
Ah1544.sys	Ilim386.sys	Aspi4dos.sys
Scsiha.sys	Scsidisk.exe	Skydrv.sys
Atdosx.sys	Nomstd.sys	Dmdrvr.bin
Sstor.sys	Hardrive.sys	Edrv.sys
Fixt_drv.sys	Ldrive.sys	Enhdisk.sys

Ditto for these "disk compressor" commands: Stacker.com, Swap.com, Sstor.exe, Devswap.com, and Xtradriv.sys.

For a clean boot, always remove or REM-out the following lines: DOS=HIGH,UMB, Device=EMM386.EXE, SHARE.EXE, FASTOPEN.EXE, mouse drivers, virus checkers, and drivers for scanners, faxes, CD-ROM drives, etc.

You must restart your computer after making each change in a startup file for the changes to take effect. If your problem goes away, you know that it's related to one of the lines you disabled. Bring the disabled lines back into use one at a time. This is a very tedious process, but it will probably help you find the culprit.

Q: I run Windows for Workgroups (WFW) and have activated its high-speed, 32-bit/file-access (32BFA) feature, which I now use in place of the SmartDrive disk cache. When I used to use SmartDrive there was plenty of information about how to set it to an optimum size (the SMARTDRV JS command for DOS and the Smartmon.exe for Windows to help tweak it). That allowed one, if you were willing to experiment, to do a good job of learning what the optimum size cache was for your particular system. Are there any similar utilities or commands for reporting the hit rate on the 32BFA cache, to help me pick an optimum size? One of my computers has 16 megabytes (MB) of random-access memory (RAM). One has 8MB.

A: Whether with the older SmartDrive or your newer 32BFA cache, setting an ideal size for your hard disk's cache is tricky—especially on computers with less than 8MB of RAM. If you set the cache too small, you lose

Operating Systems (cont.)

disk performance; if you make it too large, your Windows programs themselves starve for RAM and run slow. Truly a rob-Peter-to-pay-Paul proposition. Unhappily, there are no utilities yet to help you "tune" your 32BFA cache. WFW's self-selected settings (defaults) for 32BFA are often the best—2048 kilobytes (KB) on an 8MB system, 4096KB with 16MB RAM. However, some users have reported improved speed on an 8MB system with a cache as small as 1024KB.

Some 32BFA users still leave SmartDrive on for caching CD-ROMs (a good idea) or floppy diskettes (a not-so-good idea). If you do that, then don't set the total of your SmartDrive RAM allocation plus your 32BFA allocation larger than 25% of your total RAM. If you have a database, such as Access, that has its own cache (usually 512KB) then you'd have to experiment with different cache sizes to see what works best with your particular programs.

Q: In the August 1994 "DOS Command Dictionary," I found the MSD command rather interesting, so of course I tried it. When I ran MSD, I got the following message, "Environment string is invalid: TEMP=C:\DOS\TEMP". What does this mean?

A: Many programs create temporary (TEMP) files while they are running, and use these files as short-term workspaces. Most programs that create TEMP files delete them when you exit. If you restart your computer, power it down, or otherwise keep these programs from deleting their TEMP files upon normal exiting, these files remain strewn about your hard drive, taking up space and cluttering your disk.

Your problem is that your TEMP directory is either missing completely or its name does not exactly match the one named in your Autoexec.bat file. The way to approach a quick solution is to create a directory called C:\TEMP on your hard drive by typing: `mkdir c:\temp`. Then, use any text editor program (like the Edit.com program in MS-DOS 5.0+) to create the file named Autoexec.bat in the root directory of your C: drive, or edit an existing Autoexec.bat file. Place these two statements (on lines of their own) in the Autoexec.bat file using any text editor program:

```
SET TEMP=C:\TEMP
SET TMP=C:\TEMP
```

You first have to create that TEMP directory on your hard drive, then add these statements to the Autoexec.bat file to solve your problem. It doesn't matter if the statements are the only ones in the Autoexec.bat file. It also doesn't matter where you place these statements in the Autoexec.bat file, so don't worry about upsetting any apple carts while editing—just be accurate. DOS does not forgive typing errors!

General Computer Hardware

Q: Thank you for your article "Basic Computer Housekeeping" in the January 1995 issue. There is one question, however, that you did not address. What

about cleaning the inside of the computer? I have been told that the cover should be removed with the power off and the components cleaned off with a can (or other source) of compressed air. Is this necessary? If so, how often?

A: Yes, it is necessary. Many systems are seriously damaged by dust. The fan you hear whirring in the case is sucking air out of the back of the case while room air enters via the drives and various slots. Unless your room air gets unusual filtration, your computer's insides will, after a year of daily running, have more dust bunnies inside than you'd find under an average teen-ager's bed. Dust can clog your system's operation. One dusty scenario involves clogging the fan's bearings, thus causing it to come to a screeching halt. When the fan stops, everything overheats, and your whole system can shut down. Even if the fan doesn't stop, layers of dust on normally hot components can, like a fluffy blanket thrown over a toaster, make components fail from heat. Dust also can form tiny bridges across the circuits on the boards, causing them to short—especially when weather gets damp and the normally dry dust becomes moist and conductive. Maybe even worse than parts failing with a spectacular smoke show is that they can instead become unreliable. When parts become unreliable, that causes intermittent and undiagnosable problems of the kind we get anguished letters about.

How often to clean inside your computer is harder to say. Every six months should do—every two years is probably pushing it. If you have furry pets, clean more often. To clean your computer's insides:

- Turn the power off and open the case
- Use the smallest tool on your vacuum cleaner to reach into crevices.
- Clean inside the floppy drives if you can reach them.
- Vacuum the fan itself (you also can do this without opening the case while the computer is running).
- There also is a tiny, black fan (approximately one square inch) that sits on some processor chips (usually in 486 and higher computers) that you also should carefully vacuum.
- Buy a spray can of compressed air (not the old CFC gas—it's illegal and hurts the ozone [it's gradually being cleared from store shelves]). Use air blasts to tease the dust out of corners the vacuum can't reach.

One of our writers lives on a dusty dirt road and got tired of cleaning out his computer's innards. He reversed his cooling fan so it sucks air into the back of the case, and put an air filter over its inlet. The filter gets dirty instead of the computer's innards. Then he vacuums the filter without opening the case.

Word Processing



Q: Why do I have to turn my envelope flaps opposite from the printer instructions to get them printed correctly in Ami Pro 3.1? I have an HP-560C printer and it says to place envelopes with the address side down (flap up) with the creased flap edge aligned with the right side of the printer. When I do that they print upside down on the front of the envelope. Also, a new crease is made in the flap fold from about the flap fold to the end of the envelope, because of the vertical feed. Do all vertically fed envelopes make a partial new fold on the flap?

Word Processing (cont.)

A: Never look a computer gift horse in the mouth. If your envelopes print even halfway decently regardless of how you're feeding them in, rejoice.

Here's what's going on: The HP Deskjet 560C has two types of landscape (sideways) printing modes: one is used for printing documents in landscape, the other is used for printing envelopes in landscape. One is rotated 90° clockwise, the other 90° counter-clockwise.

When Ami Pro sends an envelope to a printer, it never really tells your printer that it's sending an envelope. Instead, it takes an imaginary 8.5 x 11-inch piece of paper, changes the page size and margins so that it looks like an envelope, then sends this to the printer. The printer sees this as a landscape document, and prints it using the document-landscape setting, rather than the envelope-landscape setting, forcing you to insert the envelope rotated 180° from what the printer manual expects. Don't worry about it. Sometimes tucking the flap into the envelope before feeding it can minimize the wrinkling. By the way, with your printer, Ami Pro 3.1 handles envelopes a bit better than version 3.0. You can get that update by calling (800) TRADE-UP.

Accounting & Finance

Q: I'm using Microsoft Money 2.0 for Windows. To make a very long and frustrating story short: I decided I wanted a different name for my checking account file and named it PrintAcc. I somehow named it without the three letter extension (.MNY) and Money wouldn't see it there. My data was effectively gone! I had a .BAK file that Money had made for me and managed to sort of get it back. But now I can't run Money's backup routine. When I try to run it, I get the message "Program not found—Cannot Find Mny.exe—This program needed to run files with Extension 'BAK'." Can you tell me how I can find this Mny.exe, or something so I can get back to where I was before I started messing with this program?

A: This problem illustrates several morals, such as "leave well enough alone" and "don't mess with what you don't understand." But an even more important moral is "never count on a so-called 'backup' done within a program to be your only backup." If you had regularly updated backups of your whole hard disk, or run one just before you started experimenting—even a backup of just the MSMONEY directory—you'd be in good shape. To get back to where you were, you could just restore MS Money from the most recent full backup and pretend that nothing ever went wrong. Many people think of backups as just for data recovery; our point is that they're also great for "repairing" messed up programs and backing yourself out of a self-made corner. With a true full-disk backup there's almost no mistake you can't recover from. Without one, an innocent experiment can foul you up beyond all belief.

What you can do now is try to find your original file (Printacct). Open File Manager and click on File, then Search. If you find the file, rename it to Printacc.mny and then double-click on it to start it inside MS Money.

A possible reason for the error while backing up may be that your backup also has no extension. Try choosing Backup from the File menu

(in MS Money) and entering a different name (for example: a:\printacc.bak). You also may need to reinstall MS Money from your original disks to get back to where you were before the crisis. *Make a few copies of your data files before you reinstall.*



Printers

Q: I had to turn off Print Manager in my Windows for Workgroups (WFW) 3.11 because of an incompatibility between it and my HP4L. Now every time I start Windows I'm harassed by a "warning" saying that Print Manager is not running. How do I get rid of the warning?

A: It's hard to imagine Print Manager can't work with the HP4L because we've seen it working. First, we'd reinvestigate your conflict between Print Manager and the HP4L. The HP4L comes with Windows Printing System software; it's very nice, but some of the earlier software versions had problems. If you're using that Windows Printing System, make sure you have version 1.35. If yours is an earlier version, you can update it by calling Hewlett-Packard Distribution at (303) 339-7009. Also, take a look at the "Read-me" file that came with the Windows driver for the LJ4L—it gives some instructions that apply particularly to installing HP4L software with Windows for Workgroups (rather than regular Windows). The file says you have to recopy the Print Manager file from your WFW disks to your Windows directory as part of your printer setup.

As for disabling the message (rather than fixing the incompatibility): Is your printer designated as being shared (with other users) even though you actually have no network? If sharing is "on," that demands that Print Manager be loaded. If WFW thinks you're sharing a printer, it will start up automatically from (encrypted) information in the Shares.pwl file.

Probably your printer shouldn't be shared. Start Print Manager, then disable the sharing option by clicking on the printer you want to stop sharing, if it's not already highlighted. Click on the button that looks like a printer disappearing from a hand. Or, from the menu, click Printer, then Stop Sharing Printer. That should work. Also verify that Print Manager isn't in your Startup group or on the "LOAD=" or "RUN=" lines of your Win.ini file. If the message still haunts you, use File Manager to go to the Windows directory and rename Shares.pwl to Shares.bak, and restart Windows. ●

Get straight answers to your technical questions. Ask PC Novice! Send your questions to: PC Novice Q&A, P.O. Box 85380, Lincoln, NE 68501. (Volume prohibits individual replies.)



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Letters To The Editor

Dear PC Novice:

I had to let you know just how much I enjoy your publication. I cannot tell you how refreshing it is to be able to read a computer magazine and be able to clearly understand the information without having to resort to three or four technical texts to make heads or tails of the information. I have applied several of your tips and hints with outstanding results. I have always hesitated fixing something that isn't broken, even though the fix would make my computer more functional. With your guidelines, I have optimized my computer, found and relocated a bad disk sector, and increased the memory beyond belief—all without disastrous errors!

All I can say is thank you for your fine publication, and please keep up the good work. With all of the computer magazines on the market, *PC Novice* ranks #1 with me.

Linda D. Ford/Greensboro, NC

Dear PC Novice:

This is a note of thanks for the March 1995 article, "Changing Your Computer's Battery." It was very timely because my home computer battery was low on power and I could tell there was a problem only because the time function lost an hour or two each day while the computer was turned off. Since the manufacturer did not even mention battery replacement [as an option] if time was running slow, I didn't know what to do. When your magazine came, I was put at ease. Thanks.

Byron Simmons/Park Ridge, IL

Dear PC Novice:

I loved your March 1995 article, "Parting With Your Old Computer." Reusing and adapting old technology is a powerful tool for change.

We have a partnership with the National Cristina Foundation, which is changing the face of education for the families here. We are loaning out old computers through our school libraries to public school families in one of the country's poorest cities. We currently have more than 250 computers in the homes of poor families. Our goal is to place 2,000 computers (one for every 10 students) by the end of 1995. We have kids out on the Internet, parents who are buying their own equipment from the resale market that they didn't know existed, and are training community members to fix up the computers. This project is a powerful motivator for community partnerships. Please don't throw the computers away!

Irene Sterling, Paterson Education Fund/Paterson, NJ

Letters to the Editor should be sent to: *PC Novice* / P.O. Box 85380, Lincoln, NE 68501-5380. Letters may be edited for clarity or space.



GLOSSARY

Of Terms

Autoexec.bat—A special file containing instructions that are carried out every time your computer system is started. These instructions help the computer get set up and find certain programs.

Batch File—A file designed to run a number of DOS commands when it is started. A batch file lets the user avoid typing the same commands repeatedly.

Bit—The smallest unit of information handled by a computer.

Boolean Logic—A system that searches for and retrieves information from computers by using and combining terms such as "and," "or," and "not" to sort data.

Buffer—A part of the CD-ROM drive that reads ahead and stores data, allowing it to be accessed quickly.

CD-ROM—Compact Disc, Read-Only Memory. A data storage medium that uses laser optics rather than magnetic means to read data. Information can be read from CD-ROM discs, but not recorded on them.

Clean Boot—A system startup process using system configuration files that contain the minimum number of instructions your computer needs to run.

Clock Speed—Measured in megahertz (MHz), it shows the number of clock cycles a chip can produce per second.

Data Transfer Rate—The speed at which a CD-ROM drive reads data from a disc.

Device Driver—Software that lets the computer communicate with hardware devices, such as a mouse, printer, or audio speakers.

Directory Tree—The structure or format used to store data on a computer's hard drive. A directory tree starts with the system's main directory and branches out into other directories and subdirectories.

DOS Shell—An environment providing a more graphical interface to work in when manipulating files and directories in DOS.

Expansion Slot—A socket inside the computer case that is designed to hold expansion cards and provides a connection between your computer and the expansion card. The slots provide a way of improving, or upgrading, the computer system.

Flat File Database—This database contains files that consist of records of a single type, in which there is no embedded structure governing the relationships between records.

Free-form Database—This type of database lets users input data without relying on the structure of a form.

GPF—General Protection Fault. Formerly known as an Unrecoverable Application Error (UAE) in Windows 3.0, a GPF error is generally connected to software, but also can be caused by hardware. A GPF is Windows' way of warning you that a program has tried to access a portion of RAM memory that is supposed to be protected from just such an unauthorized intrusion.

IDE—Integrated Device Electronics. A disk drive interface that eliminates the need for a separate adapter card because the controller electronics reside on the actual drive.

Modem—A device that allows a PC to communicate and exchange information with other modem-equipped PCs over telephone lines.

Parallel Port—A plug on the back of the computer that transmits eight bits of data, or one complete byte, simultaneously. Commonly used as a printer port.

PCMCIA—Personal Computer Memory Card International Association. A trade association that develops industry standards for removable, credit-card-sized storage media (PCMCIA cards).

PIF—Program Information File. Contains such information as a program's memory requirements and how it will use system resources.

RAM—Random-Access Memory. The temporary storage area used to load program instructions and store files currently in use. Unless a file is permanently stored on a storage device, changes to its information will be lost when the computer is turned off because RAM is cleared when power is lost.

Relational Database—A type of database that stores information in tables—rows and columns of data—and conducts searches by using data in specified columns of one table to find additional data in another table.

SCSI—Small Computer System Interface. Used for connecting computers to peripheral devices (i.e., CD-ROM drives or printers), other computers, and local-area networks. Peripheral devices are attached to a single SCSI port through a series of connections called a daisy chain. Each device is assigned a priority number or address. Transmissions through the port occur one device at a time, and peripherals with the highest priority number are the first in line for transmission.

Sound Card—A circuit board installed inside a computer to add sound capabilities to the system.

TSR—Terminate-and-Stay-Resident. A program designed to remain in memory so that it can be popped up in any program. When a TSR program is loaded, its action can be terminated without completely removing it from memory.

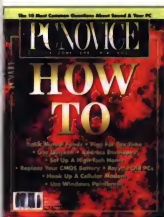
Workbook—The file containing worksheets where data is stored in a spreadsheet program.

Worksheet—The data file created by and used with a spreadsheet program.

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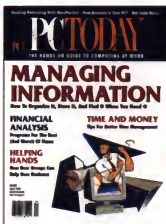


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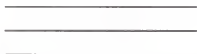
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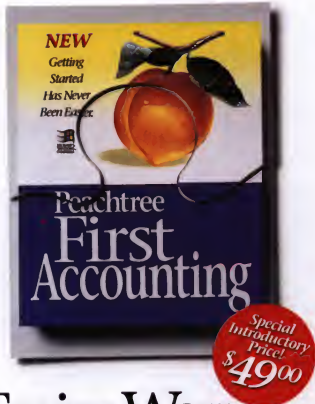
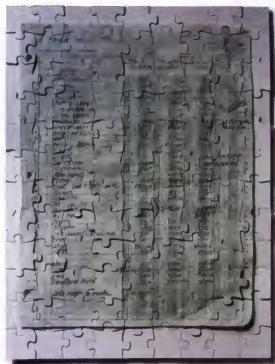
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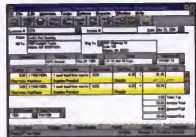
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